For CONTENTS, see pages iii and iv of Cover.

pp. 417—476.] [February 28, 1913.

# TROPICAL DISEASES BULLETIN

IMPERIAL INSTITUTE 1 MAR 1913 LIBRARY

Vol. 1. 1913. No. 8.

ISSUED UNDER
THE DIRECTION OF THE
HONORARY MANAGING COMMITTEE
OF THE

## TROPICAL DISEASES BUREAU.

General Editor:
THE DIRECTOR OF THE BUREAU.

COMMONWEALTH MYCOLOGICAL INSTITUTE 26 MAY 1971

London:
TROPICAL DISEASES BUREAU,
Imperial Institute, S.W.

Sold by BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, W.C.

Price 1/6 net.] [All Rights Reserved.

## HONORARY MANAGING COMMITTEE.

*Chairman:*

The Right Honourable Sir J. West Ridgeway, G.C.B., G.C.M.G., K.C.S.I., LL.D., *(who is also Chairman of the Advisory Committee of the Tropical Diseases Research Fund).*

Sir John Rose Bradford, K.C.M.G., F.R.S., *(representing the Royal Society).*

Surgeon-General Sir Arthur M. Branfoot, K.C.I.E., I.M.S.

Surgeon-General Sir David Bruce, C.B., F.R.S.

Colonel Sir William B. Leishman, R.A.M.C., F.R.S., K.H.P.

Sir John M'Fadyean, M.R.C.V.S.

Sir Patrick Manson, G.C.M.G., F.R.S.

Sir Ronald Ross, K.C.B., F.R.S.

Sir S. Stockman, M.R.C.V.S.

Mr. J. A. C. Tilley, *(representing the Foreign Office and Sudan Government).*

Mr. H. J. Read, C.M.G., *(representing the Colonial Office),*

*with*

Mr. A. Berriedale Keith, M.A., D.C.L., *of the Colonial Office, as Secretary.*

## STAFF OF THE BUREAU.

*Director:*

A. G. Bagshawe, M.B., B.C., D.P.H. Cantab., *of the Uganda Medical Staff.*

*Assistant Director:*

G. C. Low, M.A., M.D., *Lecturer, London School of Tropical Medicine.*

*Librarian:*

R. L. Sheppard.

*Sectional Editors:*

Fleet-Surgeon P. W. Bassett-Smith, R.N., C.B.,

Lieut-Colonel C. Birt, R.A.M.C.

Aldo Castellani, M.D.

Captain S. R. Douglas, I.M.S. (retd.).

H. B. Fantham, B.A., D.Sc.

Edward Hindle, Ph.D.

R. T. Leiper, M.B., Ch.B.,

F. M. Sandwith, M.D., F.R.C.P.

J. Henderson Smith, M.B., Ch.B.

David Thomson, M.B., Ch.B., D.P.H.

C. M. Wenyon, M.B., B.S., B.Sc.

*Editor of the Tropical Veterinary Bulletin:*

A. Leslie Sheather, B.Sc., M.R.C.V.S.

## Aids to Tropical Medicine

BY

GILBERT E. BROOKE,

*M.A. Cantab., L.R.C.P. Edin., D.P.H., F.R.G.S.; Port Health Officer, Singapore; Lecturer in Hygiene to the Medical School of the Straits Settlements.*

Pp. xii + 163, with 30 illustrations.

Price, cloth, **2s. 6d.** net.

## Aids to Tropical Hygiene

BY

R. J. BLACKHAM,

*D.P.H. (Lond.), Major R.A.M.C.: Divisional Sanitary Officer, First Division, Indian Army: Kaiser-i-Hind Medallist for Public Service in India, etc.*

Pp. viii+192, with 2 fold-in charts.

Price, cloth, **3s.** net.

LONDON:

**BAILLIÈRE, TINDALL & COX,**

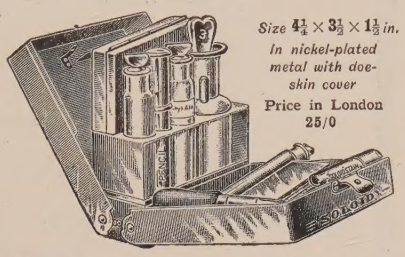
8, Henrietta St., Covent Garden.

TRADE MARK **'SOLOID'** BRAND

## BLOOD TEST CASE

No. 506

Facilitates the preparation of blood, pus, sputum and other films for microscopical examination. A very compact, complete and portable outfit.



*Size* $4\frac{1}{4} \times 3\frac{1}{2} \times 1\frac{1}{2}$ *in.*
*In nickel-plated metal with doe-skin cover*
Price in London 25/0

BURROUGHS WELLCOME & CO., LONDON

NEW YORK MONTREAL SYDNEY
CAPE TOWN MILAN SHANGHAI
BUENOS AIRES BOMBAY

*xx* 539 *Copyright*

# W. WATSON & SONS MICROSCOPES.

— BRITISH MADE AT BARNET, HERTS. —

***Ensure comfort, accuracy and rapidity in working. Last a lifetime.***

**THE BACTIL MICROSCOPE** has been specially designed for the Laboratory Worker. It is fitted with MECHANICAL STAGE, giving a range of movement of 2 inches horizontally and $1\frac{1}{2}$ inches vertically. COMPOUND SUBSTAGE with focussing and centring movements. Vertical Lever Fine Adjustment, working from side of limb. All working parts are slotted and sprung, thereby ensuring smooth movements after any amount of hard usage.

**BACTIL MICROSCOPE,** as above specification, with Eyepieces Nos. 2 and 4, Objectives $\frac{2}{3}''$ and $\frac{1}{6}''$, New Aplanatised Abbe Illuminator, in Mahogany Case .. **£17 5 0**

**WATSON'S NEW** $\frac{1}{12}''$ **OBJECTIVE,** N.A. 1·30. Gives beautiful definition and a flat field .. .. .. .. .. .. .. .. .. **£5 0 0**

WRITE FOR WATSON'S MICROSCOPE CATALOGUE. IT WILL BE SENT GRATIS.

***W. WATSON & SONS, Ltd., 313, High Holborn, LONDON, W.C.***

*Optical Works:*—High Barnet, Herts.
*Branch:*—184, Great Portland Street, London, W.

ESTABLISHED 1837.

**Now Ready.** ***Price 7/6 net.*** *Postage in Great Britain, 4d. Abroad, 6d.*

*Pp. xvi. + 232, with 17 Plates (1 Coloured).*

## The Care and Treatment of European Children in the Tropics.

By G. MONTAGU HARSTON, M.D.Lond., M.R.C.S.Eng., L.R.C.P.Lond.,
Fellow of the Society of Tropical Medicine and Hygiene; Fellow of the Royal Society of Medicine; Ophthalmic Surgeon to the Tung Wa Hospital, Hong Kong.

WITH INTRODUCTION BY **Sir PATRICK MANSON,** G.C.M.G., M.D.

**London: BAILLIÈRE, TINDALL & COX,**
**8, Henrietta Street, Covent Garden.**

# LEITZ LONDON

## Micro-Objectives.

The Glasses of which our Objectives are made up are exclusively of a kind which long experience has shown to be unaffected by atmospheric influences. The lenses are in particular not liable to undergo spontaneous changes.

The following is a selection from our Catalogue of recently improved Lenses:—

| | | £ | s. | d. |
|---|---|---|---|---|
| **ACHROMATIC.** | | | | |
| 1½ in. | 0·11 N.A. | 0 | 15 | 0 |
| 1 in. | 0·19 N.A. | 0 | 15 | 0 |
| 2/3 in. | 0·26 N.A. | 0 | 15 | 0 |
| 1/2 in. | 0·40 N.A. | 1 | 0 | 0 |
| 2/5 in. | 0·47 N.A. | 1 | 5 | 0 |
| 1/6 in. | 0·82 N.A. | 1 | 10 | 0 |
| 1/8 in. | 0·85 N.A. | 1 | 10 | 0 |
| 1/12 in. | oil imm. 1·30 N.A. | 5 | 0 | 0 |
| **FLUORITE.** | | | | |
| 1/6 in. | 0·82 N.A. | 2 | 0 | 0 |
| 1/8 in. | 0·85 N.A. | 2 | 0 | 0 |
| 1/8 in. | (double fluorite) 0·95 N.A. | 3 | 5 | 0 |
| 1/10 in. | 0·87 N.A. | 2 | 0 | 0 |
| 1/11 in. | 0·87 N.A. | 3 | 10 | 0 |
| 1/12 in. | oil imm. 1·32 N.A. | 6 | 10 | 0 |
| 1/16 in. | do. 1·32 N.A. | 7 | 10 | 0 |
| **APOCHROMATIC.** | | | | |
| 16 mm. | (2/3 in.) 0·30 N.A. | 3 | 0 | 0 |
| 8 mm. | (1/3 in.) 0·65 N.A. | 4 | 0 | 0 |
| 4 mm. | (1/6 in.) 0·95 N.A. | 6 | 0 | 0 |
| 3 mm. | (1/8 in.) 0·95 N.A. | 6 | 10 | 0 |
| 2 mm. | (1/12 in.) oil imm. 1·32 N.A. | 12 | 10 | 0 |
| 2 mm. | (1/12 in.) do. 1·40 N.A. | 16 | 5 | 0 |

18, BLOOMSBURY SQUARE, W.C.

*(A few doors from the British Museum.)*

# "PATHOLOGICA"

## A FORTNIGHTLY REVIEW.

***Annual Subscription, Lire 20 = £1 0s. 0d.***

**Vth YEAR.** ✻ **1913.**

**The leading paper of Italian Pathology. It sums up all the International progress of Pathology, and is amongst the most widely circulated Italian scientific periodical publications.**

***Editorial and Managerial Offices:***

**——16=1, VIA PORTOVIA, GENOA.——**

TROPICAL DISEASES BUREAU.

# TROPICAL DISEASES BULLETIN.

Vol. I.] 1913. [No. 8.

## FILARIASIS.

FOLEY (H.). **Études Morphologiques sur les Microfilaires à Gaine (*Mf. Bancrofti* et *Mf. Diurna*). Observations faites chez les Tirailleurs Sénégalais d'Algérie.**—*Ann. Inst. Pasteur.* 1913. Jan. Vol. 27. No. 1. pp. 50-68.

The material from which these studies were made was obtained from a detachment of Senegalese soldiers quartered in Algiers. Many of these were filariated, three species of filaria—*F. bancrofti*, *F. loa*, and *F. perstans*—being met with. Of the former two the first was much the more frequent. At the commencement of his studies the author found some difficulty in distinguishing between the embryos of *F. bancrofti* and *F. loa* (*diurna*), but after examining the collections at the Pasteur Institute in Paris he found that this was a comparatively easy matter. The paper is devoted to a detailed account of the differences between these two filariae and, though mainly confirmatory of previous work, nevertheless contains much interesting information. For the research the larval filariae were examined in three ways—(1) In the fresh state; (2) After vital staining, and (3) In dried and stained films.

Morphological differences are not so marked in the fresh state but, according to Foley, the embryos of *F. loa* are shorter and somewhat broader than those of *F. bancrofti*. The following table shows this—

Measurements in the fresh state in microns.

| — | *F. bancrofti* embryos. | *F. loa* (*diurna*) embryos. |
|---|---|---|
| Total length (without sheath) ... ... | 280 to 295 | 260 to 275 |
| Distance of V spot from extremity of head | 89 to 95 | 85 to 95 |
| Distance of tail spot from extremity of tail. | 53 to 55 | 55 to 57 |
| Greatest breadth ... ... ... ... | 5·50 to 5·75 | 5·75 to 6·50 |

For vital staining weak solutions of methylene blue and neutral red were used. The penetration of the stain in *F. bancrofti* takes

(28581—2.) Wt. P 2843—74. 2000. 2/13. D & S.

place slowly by the narrow pores (*pores étroits*); the spots (V and tail) do not appear clearly; the colour diffuses uniformly over the whole surface of the body and impregnates the cells of the subcuticula (*Matrixzellen der Subcuticula* of RODENWALDT). In *F. loa* on the other hand, as PENEL has specially noted, the colour penetrates by the pores of the V and tail spots in a constant manner. In a short time the V spot shows up very clearly and from there the stain diffuses into the body of the embryo. The cells of the subcuticula are much less visible. Even after all the body is stained both V and tail spots still show up distinctly.

In dried and stained films characteristic differences between the two embryos are obtained. Methylene blue, haemalum and Giemsa's solution were the stains employed. With the latter the sheath in *F. loa* remains uncoloured while in *F. bancrofti* it takes on a carmine tint. Again, the central body or viscus (*corps central*) is not apparent in the former while in the latter it appears as a continuous filament staining a bright violet red. In *F. loa* the central column of cells occupies the whole thickness of the body; they stain a pure blue colour. In *F. bancrofti* the cells form a narrow column which leaves a clear space on each side of it, Giemsa staining them a violet blue.

The tail of *F. loa* generally shows a series of sharp curves at its extremity, producing the appearance of a corkscrew. The terminal cells are often much elongated and with more or less considerable intervals occupy the complete length of the body. This is an absolute differential characteristic. [See also paper by FÜLLEBORN in this *Bulletin*, No. 2, p. 87]. In *F. bancrofti*, on the other hand, the tail is more drawn out, is more sharply pointed, and the terminal cells fall short of the end of the body by a distinct interval. [The following diagrams taken from the paper demonstrate these points].

Caudal extremities of *F. loa* (*diurna*) embryos.

Caudal extremities of *F. bancrofti* embryos.

Two tables of measurements are given, these showing the total length of stained specimens and also the distances of the various spots in terms of percentages of the whole length. [Some of the terms used are different from those employed in the English nomenclature. For example the *Tache oblique* is not spoken of as a spot in England but is known as "the break in the continuity of the cells." The V spot in the text is also spoken of as corresponding to "*l'interruption de la colonne nucléaire.*" This is not only confusing, but is, strictly speaking, incorrect as there is no complete break in the cells at this point. This term if used at all should correspond to the *Tache oblique*].

After some remarks on the periodicity of the two embryos, in which it is stated that this feature is more constant in *F. loa* than in *F. bancrofti*, the author sums up his conclusions in the following table:

| Stained by Giemsa's method. | *F. bancrofti* embryos. | *F. loa* (*diurna*) embryos. |
|---|---|---|
| Sheath ... ... | Coloured ... ... ... | Uncoloured. |
| Cells ... ... ... | Violet blue ... ... | Pure blue. |
| Cells of the cephalic extremity. | Sharply terminated in a straight row. | More or less irregularly scattered. |
| Cells of the body ... | Small, rounded, easy to count, forming a column narrower than body of embryo. | Larger, less regular, fused at places, occupying the whole thickness of embryo. |
| Cells of the caudal extremity. | Not reaching the point of tail. | Occupy the whole length of the caudal extremity. |
| Central viscus ... | Well coloured ... ... | Not apparent. |

The paper is illustrated by eight black and white sketches and one coloured plate. There are also six tables.

G. C. Low.

Ouzilleau (F.). **Les Filaires humaines de la Région du Mbomou (Afrique équatoriale française). Pathogénie de l'Éléphantiasis de cette Région. Rôle de la** *Filaria volvulus.*—*Bull. Soc. Path. Exot.* 1913. Jan. Vol. 7. No. 1. pp. 80-88.

In the region of Mbomu, one of the two head waters of the Ubangi, the proportion of elephantiasis in different districts varies from 0·3 to 3 per cent. The different forms comprise elephantiasis of the scrotum and penis, labia majora and minora, and the inferior extremities, and lymph scrotum and adenolymphocele.

The human filariae found, according to the author, are of three species, *Filaria perstans*, *Filaria loa* and *Filaria volvulus*. *Filaria bancrofti* does not exist, or at least was never seen by the author in 1,500 day blood examinations, nor in 400 night ones. The endemic index of *F. perstans* is 64 per cent., in natives above the age of ten. The index of *F. loa* is much less, 16 per cent. These two parasites are frequently found in the same blood and the patients may suffer at the same time from the

cysts of *F. volvulus,* though it would appear that an infection by the latter exercises an unfavourable influence on the two former. *F. volvulus* seems to be very common. The cysts in which this parasite lives are generally superficial and situated under the skin which is movable over them. Adhesions, however, often bind them to the surrounding tissues or to the muscles and often even to the bones. They are generally very apparent and are almost always (80 per cent.) situated on the lateral aspects of the thorax. Sometimes they are very large, the size of an apple, and then are apparent at a glance in the semi-naked natives. They vary considerably, however, in volume, some being the size of a pigeon's egg or much smaller. In the other 20 per cent. Ouzilleau has encountered them on the osseous surfaces, or over the joints in contact with the skin, in situations such as the iliac crest, the great trochanter, knee joints, the olecranon and the frontal, parietal, and occipital regions of the head. In addition they have been found in the inner parts of the inguinal folds, over the symphysis pubis and along the cord, that is, in areas where they can easily be confused with lymphatic glands. It is further stated that *F. volvulus* embryos can be found in the blood but that this is rare. In some 200 blood examinations the author believes he found them once. The patient, a female, was suffering from bronchitis and had a *Filaria volvulus* cyst on the thorax. The blood, liquid from the cyst, and juice from the inguinal glands all showed micro-filariae in large numbers. [Measurements and descriptions of these are wanting; therefore there is no proof that those from the blood and glands were *volvulus* embryos]. According to the author similar embryos are very often found in the enlarged gland masses (*masses ganglionnaires*) of the crural region and in the lymphatic network of the inguinal crural area.

A suggestion is put forward that elephantiasis, in the district of Mbomu, is due to the *Filaria volvulus*. This is based on the fact that in every case of this disease seen by the author *Filaria volvulus* cysts were present and that in all of them micro-filariae were found in the inguinal glands.

[Many of the statements contained in this paper require confirmation. The fact of embryo filariae being found in the blood and in the enlarged groin glands points to their being the embryos of *F. bancrofti* and not of *F. volvulus*. Further the geographical range of elephantiasis does not correspond with that of *F. volvulus* and it is difficult to understand how a parasite lying in a cyst in the connective tissues could obstruct the lymphatics and produce such a train of symptoms].

G. C. L.

Low (George C.). **The Life of Filarial Embryos outside the Body.**—*Jl. Trop. Med. & Hyg.* 1912. Nov. 15. Vol. 15. No. 22. pp. 338-339.

The author criticises Wellman and Johns' paper on "Artificial Culture of Filarial Embryos" (*Jl. Amer. Med. Assoc.* 1912.

Oct. 26. Vol. 59. No. 17 and this *Bulletin* Vol. 1, No. 2, p. 91). He suggests that the increase of length of the embryos is possibly similar to that described by FÜLLEBORN and others when these forms have been inoculated into uninfected dogs. In any case the suggestion that the increased length of the embryos corresponds to their limit of development in the digestive tract of the mosquito is untenable because the embryos migrate immediately from the stomach to the Malpighian tubes.

G. C. L.

## ELEPHANTIASIS.

THOMPSON (H. Gordon). **Surgical Work in South China.**—*Far Eastern Assoc. Trop. Med.: Trans. Second Biennial Congress held at Hong Kong.* 1912. pp. 149-157. With 4 plates.

In this paper the author describes a modified operation for elephantiasis of the scrotum. He refers to a paper by BALDWIN (*Brit. Med. Jl.* 1910. Feb. 26. pp. 495-496) where the statement was made that in practically all cases of lymph scrotum the inner lining of the prepuce, which is really the tunnel leading down to the glans penis, consisted of a collar of healthy skin. BALDWIN therefore advocated the slitting up of this tunnel, in which the glans penis is to be found, and suggested the use of the healthy collar of skin to help to clothe the new penis.

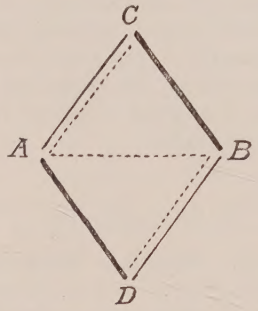
Thompson has found this an excellent suggestion, but instead of slitting up the tunnel he now dissects out the penis with the inner surface of the prepuce intact and separates them from the rest of the affected tissue. Then after the usual flaps have been made, the testicles dissected out and the main mass of the scrotum removed, he turns back this collar of the inner skin of the prepuce without slitting it and generally finds that it is sufficient to clothe the penis for over an inch from the base of the glans. By not slitting it or damaging it in any way its vitality is unimpaired and if even a little tight at first it rapidly stretches and unites with the lateral flaps. The result is a penis covered with smooth healthy skin instead of one imbedded in the hairy skin of the scrotum.

G. C. L.

ROSANOW (W. N.). **Lymphangioplastik bei Elephantiasis.** [Lymphangioplasty in Elephantiasis.]—*Arch. f. Klinische Chirurgie.* 1912. Oct. Vol. 99. No. 3. pp. 645-655. With 4 text-figures.

Another operation for elephantiasis, a combination and modification of the method of LANZ and OPPEL, is here described. All these operations aim at the formation of an anastamosis between the superficial and deep lymphatics. [Compare also the operation devised by KONDOLEON. See this *Bulletin* No. 2, p. 93.] In the present instance rhomboidal areas of skin were removed from the thigh and the calf of a patient suffering from elephantiasis. These measured fifteen centimetres in the short diameter for the former, eleven for the latter. The subcutaneous tissues and

aponeurosis were next cut through along the whole length of the short diagonal of the rhombus (line A. B.) and then along each




lateral side line down to the muscles (lines A. C., B. D.). Two triangular flaps were thus produced and each, after dissecting out, was then turned in into a cleft between the layers of the muscles adjoining, the vastus externus muscle for the thigh, the gastrocnemius for the calf, the fibres being separated for the purpose by means of a blunt instrument. The flaps were then united by catgut stitches to the muscles and periosteum, thus fixing them securely. After this the skin was drawn together and sutured along the long diameter of the diamond, compression thus being exerted upon the lymphatics below. The results according to Rosanow were very good, the patient being restored to a more or less active life. Photographs of the condition before and after operation are given. These show an improvement but not a cure.

G. C. L.

Kondoléon (Emm.). **Die chirurgische Behandlung der elefantiastischen Oedeme durch eine neue Methode der Lymphableitung.** [The Surgical Treatment of Elephantoid Oedema by a New Method of Lymph Drainage.]—*Münch. Med. Wochenschr.* 1912. Dec. 10. Vol. 59. No. 50. pp. 2726-2729.

The author's operation has already been described (see this *Bulletin*, No. 2, p. 93). The method consists of making a broad communication between the subcutaneous tissues and the muscles. This is accomplished by removing long strips of the thickened deep fascia along both sides of the affected limb.

G. C. L.

## Dracontiasis.

Wurtz & Sorel. **Note sur la Durée de l'Incubation du Ver de Guinée.**—*Rev. de Méd. et d'Hyg. Trop.* 1912. Vol. 9. No. 2. pp. 123-124.

Most authorities estimate the duration of the incubation of guinea worm at about twelve months. Manson in two cases definitely noted the lapse of one year between exposure to infection and the appearance of the worm. Powell in eight cases of simultaneous exposure found that the incubation period varied from 345 to 435 days. In March 1911 the authors paid a visit of barely three hours to a village in the forest of the Ivory Coast

where they noticed many cases of dracontiasis. 260 days later two of their servants were found to be infected both in the arm and foot. At the time of visiting the village they had worn European shoes, socks and drawers. They did not enter the stream from which the village obtained its water; but drank a great quantity of it. It appears, therefore, that infection can only have resulted from the ingestion of this impure water.

H. M. Hanschell.

## Filariasis in Animals.

Mitter (S. N.). *Filaria immitis* **in Calcutta.**—*Bull. Soc. Path. Exot.* 1912. Nov. Vol. 5. No. 9. pp. 731-733.

The author refers to a paper of his own on cutaneous filariasis of dogs in Calcutta. Filarial embryos were present in the blood from the pustules. Neumann, commenting on this paper, stated that these embryos were not those of *Filaria immitis* and that this parasite had not been recorded from Calcutta.

Mitter now shows that it does occur there. In two dogs adult parasites were found at the autopsy in the right ventricle, in others in the right auricle. All the dogs died naturally after having exhibited marked clinical symptoms. Two were imported English fox-terriers, one a fox-terrier born and bred in the country, the fourth a cross-bred bull dog.

Railliet and Henry, who joined in the discussion on Mitter's paper, stated that Ganguly (*Rev. vétér.* 1912. pp. 675-676) had also noted *Filaria* (*Dirofilaria*) *immitis* on three occasions in dogs in Calcutta. They however, like Neumann, do not consider that this filaria has any connection with verminous dermatitis. The embryos found by Mitter in the pustules and in the blood measured 460$\mu$ in length, a much greater measurement than the embryos of *Dirofilaria immitis*, which only attain to 285 to 295$\mu$, or the embryos of *Filaria* (*Acanthocheilonema*) *recondita* and *A. dracunculoides* which are still smaller, 195 to 230$\mu$. They lie between those of the *Dirofilaria repens* (300 to 360$\mu$) and *Acanthocheilonema grassii* (567$\mu$), but as the latter never circulate in the blood Railliet and Henry incline to the opinion that Mitter's embryos are after all only examples of the former. A somewhat similar case observed by Bonvicini was definitely determined by the same authors to have been due to that species.

G. C. L.

Bernard (P. Noël) & Bauche (J.). **Conditions de Propagation de la Filariose sous-cutanée du Chien.** *Stegomyia fasciata* **Hôte Intermédiare de** *Dirofilaria repens.*—*Bull. Soc. Path. Exot.* 1913. Jan. Vol. 7. No. 1. pp. 89-99.

In a previous paper (see this *Bulletin* No. 2, p. 95) the authors described a series of animal filariae from Annam. They now state that in the region of Hué (Annam) subcutaneous filariasis of dogs (*Dirofilaria repens*) is very common, while vascular filariasis (*Dirofilaria immitis*) is rare. In 400 blood examinations the latter was not diagnosed once, and at the autopsies of

25 filariated dogs a slight infection was only seen twice (four adults in the heart). In the present paper the life history of the extracorporeal phase of *Dirofilaria repens* is worked out in *Stegomyia fasciata* vel *calopus*. This takes place in the Malpighian tubes in a similar manner to that described by GRASSI and NOE, LOW, BANCROFT and others for the embryos of *Dirofilaria immitis*. The three former observers, working in Italy, found that the development took place in the Malpighian tubes of *Anopheles maculipennis*, while the latter, in Australia, found the same changes in *Culex fatigans*. That a development on such lines should take place for the embryos of *D. repens* in *Stegomyia fasciata* is therefore quite in keeping with the metamorphosis of the filariae in general. At suitable temperatures the development takes nine days for completion, forms then being found in the proboscis. If the weather is colder fifteen days or more may be required. The authors think that the mosquito phase in nature most likely occurs in the hot damp weather prevailing between April and August, and that that is the time when fresh dogs become infected. Some interesting observations are also detailed of the probable time required for the larval forms to reach the adult stage in the body of the dog.

A diagram of the developing forms is given. [These show changes very similar to those undergone by *F. bancrofti* and *D. immitis* in their respective mosquito hosts.]

G. C. L.

SAISAWA. **Untersuchungen über Hundefilarien.** [Researches on Dog Filariae.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1912. Nov. 9. Vol. 67. No. 1-2. pp. 68-75. With 2 plates.

The object of the author's researches was as follows:—

(1) To confirm the work of RODENWALDT and FÜLLEBORN on the minute anatomy of the dog filariae.

(2) To confirm for the same species the constancy of the anatomical fixed points in relationship to the total length of the embryo, and to show the consequent value of this for differential diagnosis.

(3) To prove how the cells observed in the embryos in the circulating blood undergo further development when taken up by the mosquito and especially to determine whether the G cells of RODENWALDT belong to the genital system or not.

RODENWALDT and FÜLLEBORN's work was confirmed in detail while the conclusion reached about the G cells was that they had nothing to do with the genital system.

The article is illustrated by two plates, one coloured, and many tables of measurements are given.

G. C. L.

WIRTH (D.). **Filariosen bei einheimischen Pferden.** [Filariasis in European Horses.]—*Zeits. f. Infektionskrankht., Parasit. Krankh., u. Hyg. d. Haustiere.* 1912. Oct. Vol. 12. No. 3. pp. 295-298.

Writing from the Veterinary College in Vienna Wirth describes four cases in which filarial embryos (microfilariae) were found in

the blood of indigenous horses. Probably these were the embryos of *Filaria papillosa* (*Filaria equina*) but they seemed to differ in some respects as regards their staining reactions from embryos extracted directly from a female *Filaria papillosa*. Subcutaneous injections of atoxyl were given, with apparently good results.

G. C. L.

PRICOLO (Antonio). **Larves de Filaires dans le Sang de Chameaux Tunisiens et de l'Erythrée.**—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Jan. 11. Vol. 67. No. 6. pp. 478-479.

A description of the embryos is given. Some of the camels from which they were recovered were in perfect health, while others were extremely emaciated. One camel died without any cause being discovered. As a rule only one or two parasites were found in each preparation but in one twenty were seen.

The head of the embryo is rounded with a bright spot at the extremity; the tail terminates in a point. The length is given as 298$\mu$, the breadth as 6·2$\mu$. Locomotion is very slight in ordinary wet preparations. [It is not stated if adults were looked for in camels that died and the description of the embryos themselves is so meagre that little can be made out from it.]

G. C. L.

---

ERRATUM.

*Bulletin* No. 2. (November 30, 1912.) p. 87. Lines 11 and 12 from top. "These glands were not hard as a rule, but formed soft masses (varicose groin glands)" should read "These glands were not soft but formed hard masses (*Drüsenpakete*)."

Dr. FÜLLEBORN points out in a letter that the words *harte* and *weiche* were accidentally transposed in the German original.

## *HELMINTHIASIS.

### Schistosomiasis.

Nelson (W. Horner). **Notes on Three Cases of Bilharzia Haematobia.**—*Australasian Med. Gaz.* 1912. Nov. 9. Vol. 32. No. 19. pp. 482-483.

Two of the three cases must have acquired the infection in Australia, for they had never been out of that country. The disease has therefore been introduced into Australia. One of the cases, a woman, lived at a timber mill, where an ex-soldier from the Transvaal, infected with bilharzia, was employed. She must have contracted the disease from him in some way or other. There were no bathing facilities; water for the mill was pumped from a place over a hill a mile away. Rain water was used for drinking. The ex-soldier had to micturate almost every half hour and he may have infected the bread he handled with fingers soiled with urine. The other indigenous case was a West Australian male, 21 years old. He lived twelve miles away, the contour of the country making it impossible for drainage to come from the mill. More than a year before the onset of his symptoms he had been at the mill for a period of two weeks. He was a platelayer and may have got his infection from the flushings of a lavatory car used by an infected person. The Central Board of Health has now made such cases notifiable; and it will soon be ascertained whether the disease is widespread or not.

H. M. Hanschell.

Bouet (G.) & Roubaud (E.). **Bilharziose au Dahomey et en Haute-Casamance. Quelques Observations Biologiques sur le Miracidium Bilharzien.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 837-842.

The authors state that the data collected by them in Dahomey complete the numerous records of bilharziasis in the Soudan, Senegal and Guinea. The disease is common in lower and middle Dahomey. Terminal spined ova are frequently found in the urine of patients of various ages, who come under observation for other maladies. Vesical bilharziasis with blood-stained urine is not however uncommon. The authors give details of cases where attacks of dysentery with terminal spined ova in the faeces (never any lateral spined ova) followed on or coincided with the passage of blood stained urine containing terminal spined ova. In one such case the dysentery had disappeared and two years later the inguinal and femoral glands became enlarged, and there was epididymitis, all without apparent cause. It is suggested that this may have been due to the passage of the worms from the portal system into the lymphatics of the regions affected. A large proportion of children are infected but usually the infection disappears on reaching adult age. The authors experimented with ova (terminal spined) obtained from the faeces and urine of a patient.

---

* During Dr. Leiper's absence in West Africa this Section is being undertaken by Dr. H. M. Hanschell.

1. *Preservation of embryos in urine.*—Ova in urine, kept in that medium for 12 to 20 hours at 23° to 25° C., set free motile miracidia when placed in water. This was the longest period of resistance of the ova in pure urine.

2. *Preservation of embryos on damp sand.*—Fragments of clot containing ova were divided into two lots. One lot was placed in pure water; the embryos emerged from the eggs in less than one hour. The other lot was placed on fine sand, slightly moistened. These ova did not set free their contained embryos until placed in contact with pure water 12, 24, or 30 hours later.

Eggs were placed on a little bed of sand, the periphery of which was sucking in water; 30 hours afterwards living miracidia were found in the water surrounding the bed of sand.

This property possessed by the embryos, of keeping alive inside the egg on damp sand for more than a day, forms an important biological phenomenon. Eggs may be deposited, in the act of micturition, on damp soil in the neighbourhood of sheets of water, and the embryos, set free from them by the first shower of rain occurring within 30 hours, may reach the water either mechanically, by being washed there, or by their own efforts.

3. *Non-resistance to drying.*—Conor's findings are confirmed. Eggs dried for a few moments, either naked or covered up in clot, do not set free their embryos. Miracidia exposed to drying for barely a few minutes do not revive when placed in water.

4. *Action of heat.*—Conor shewed that the bilharzia miracidia of Tunisia remained alive, and active at 45° C. and only died quickly after 50° C. was reached. Their optimum temperature appeared to be between 30° and 40° C.

The authors' experiments with the embryos in Casamance shewed that after 41° C. they were barely alive, and that they died in less than five minutes at 45° C. At 41° C. many died at the end of fifteen minutes, a few lived on for one and a quarter hours, contracting up into a ball and becoming very sluggish. When the temperature was lowered a few revived. The Casamance miracidia appear to have an optimum temperature of 30° to 35° C. According to Conor the presence of springs of warm water, with temperature sometimes high (42° to 45° C. at Gabès) determines the distribution of bilharziasis in Tunisia. There would appear to be in that country a geographical race of Schistosomum, characterised by the high degree of resistance to heat possessed by its embryos.

5. *Action of Hydrochloric Acid and Soap.*—Like Conor, the authors found that a trace of HCl or soap in the water quickly killed the embryos.

6. *Fixation of the embryos in water to which serum is added.*—A few drops of dogs' serum were added to water containing active embryos, in a watch glass. This albuminous fluid on evaporating forms at its edges a thin semi-solid drying border. All the embryos, one after the other, coming full tilt against this slightly viscous border, stop, thrust the anterior end several times into the viscous mass as if searching for a favourable spot, and then become quiescent. One minute after the fixation of the head

of the embryo, the peripheral cilia and those of the flame cells cease all movement.

This phenomenon is seen if the water is mixed with a few drops of urine containing blood and appears to be a biological fixation such as is undergone by the embryo at the start of its development in its host. Nothing like it is seen in pure water, even during continuous evaporation. The phenomenon has nothing in common with the entanglement of the embryos in sticky matter. Embryos enclosed in mucus move about trying to get free. Even when progression is prevented, the cilia continue to move, and when these at length cease, the cilia of the flame cells can be seen moving for a still longer period.

The authors failed to observe any analogous behaviour of embryos placed on pieces of skin and mucous membrane of monkeys, rats and fowls, or directly on the body of small rodents. They failed to infect rats and mice soaked for many hours in water teeming with embryos. They confess themselves unable to form any idea of the normal mode of infection of human beings.

H. M. H.

Ferguson (A. R.). **The Lesions of Bilharzial Disease.**—*Glasgow Med. Jl.* 1913. Jan. Vol. 29. No. 1. pp. 14-23. With 3 plates.

Ferguson in the introduction to his paper points out the wide-spread distribution of bilharziasis. Since the Philippine war it has been found in many parts of the United States. Manson in his Lane lectures (San Francisco 1905) gave warning that this might happen. The author himself felt certain that troops returning from the South African war must have introduced the disease into Australia (see summary of Nelson's paper above).

Bilharziasis has existed in the Nile valley since the earliest times for (1.) Calculus of urinary bladder is found in mummies of almost every dynasty so frequently as to suggest the operation of the same local cause as now exists, *viz.* bilharziasis. (2.) Remedies known and practised by the ancient Egyptians for the relief and cure of haematuria are so numerous as to suggest that this condition was very frequent. (3.) Ruffer has recently demonstrated calcified bilharzial ova in microscopical preparations made from the kidney of a mummy of one of the later dynasties. In Egypt to-day the disease is prevalent and severe. Figures based on the discovery of eggs in excreta are useful as indicating that ova are reaching the surface of hollow viscera, urinary bladder, colon, rectum, and gall-bladder, but are of little value as an index of the degree of infection amongst the inhabitants as a whole. Statistics based on a series of consecutive post-mortem examinations give a higher percentage of infection. Greisinger and Sonsino found that 35-40 per cent. of the people of Cairo were infected—figures based on the discovery of the parasite at autopsy. Ferguson thinks the only reliable basis of information lies in finding ova, calcified or recent, within the body. Selected tissues are slowly digested in 3-5 per cent. solution of KOH at 60-80° C. and then the sediment is examined with the microscope. By this method ova have been found in many unsuspected parts of the body, *e.g.* the ovary, lungs, brain, and spinal

cord. He has thus proved infection in 61 per cent. of 600 male subjects between 5 and 65 years old, which came consecutively to autopsy. A considerable number of young girls suffer from bilharziasis but he has not yet been able to establish the percentage proportion of infection with the same accuracy as for the male sex.

The worms appeared to select the inferior mesenteric vein route. Loos attributes this to some peculiarity in the venous blood in this vessel. If there are very wide and numerous anastomoses between the inferior mesenteric and middle and inferior haemorrhoidal veins, the worms pass over from the portal to the systemic system. They have been found in the inferior vena cava and the lungs.

Ferguson believes that for the bilharzial parasite no intermediate host is necessary, infection being direct from man to man. Infection does not take place by the gastro-intestinal tract. Miracidia are killed in three minutes by 1 in 2,000 dilution HCl. Infection most probably takes place by the cutaneous or one of the exposed mucous surfaces of the body. Observations carried out in Cairo by Davy and himself tend to show that infection is generally through the nasal mucous membrane. Possibly it may take place also at the genitalia. The author discusses shortly the validity of the species *mansoni*. In Egypt it may be stated positively that lateral spined ova do occur both in the urine and embedded in the vesical wall, and digestion of the rectal wall often shows lateral and terminal spined ova, the latter variety often in greater numbers.

H. M. H.

## Distomiasis.

Kobayashi (H.). **A Preliminary Report on the Source of the Human Liver Distome,** *Clonorchis Endemicus* **(Bälz)** *(Distomum Spathulatum,* **Leuckart**).—*Far Eastern Assoc. Trop. Med.: Trans. Second Biennial Congress held at Hong Kong.* 1912. pp. 108-112. With 1 plate.

Suggestions have been made that infection with the liver distome of Japan is acquired by drinking rainwater, eating uncooked molluscs, etc. Kobayashi's experiments prove these suggestions to be baseless. He examined a number of molluscs, fishes and aquatic arthropods for trematode larvae, and found a species of young distome encysted in the muscles of some freshwater fishes. It was most common in fishes from localities where infection with the liver distome was most frequent. Cats are often found naturally infected with this distome and these animals were therefore used for experiment. Kittens, ascertained beforehand to be uninfected by repeated examinations of the faeces, were given the flesh of fish containing the above mentioned encysted distome, and otherwise were fed exclusively on boiled rice and disinfected milk. Nine kittens and two adult cats were fed on the flesh of *Pseudorasbora parva*, and *Leucogobio guntheri;* all became infected. They were killed or died and examined at varying intervals after the feed. The bile duct, hepatic ducts, the gall bladder, pancreas and duodenum were found infected. Some infected flesh of *P. parva* was forced into the gullets of several rabbits and guinea-pigs. After some days their livers were found

infected with identical distomes. The author describes the flukes obtained in these experiments and points out characters distinguishing them from *Metorchis truncatus*, *Opisthorchis felineus* and *O. noverca*. He believes they all were *Clonorchis endemicus*, in spite of their small size, this apparently depending upon the space and nourishment available for the parasite. Nine species of fish were found to harbour the encysted distome in question, the most commonly and heavily infected being the two mentioned above. The author uses the name *endemicus* for one of the two species of Japanese human liver distomes distinguished by Loos. He proposes to show later that these two species are really one.

H. M. H.

ROUX & TARDIEU. **Un Cas de Distomatose Hépatique** (*Opisthorchis Sinensis*) **chez une Européenne.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1912. Oct. Vol. 3. No. 8. pp. 528-532,

The authors note the great frequency of infection of the natives of Tonkin with *Opisthorchis* (*Clonorchis*) *sinensis*. The investigations of SÉGUIN, MOUZELS, MATHIS and LÉGER shew that 30 per cent. are infected. Only one case in a European had been described, by AUDIAU in 1910. This patient had lived many years like an Annamese, and had partaken exclusively of native food. The authors' patient, however, had never eaten of other than "*cuisine française.*" She was 45 years old and was born in Guiana, where she had lived till 21; she had spent three years in New Caledonia and had been for seventeen years in Indo-China, during which time she had been three times to France. She was admitted to hospital to complete a convalescence after dysentery. Examination of the faeces revealed the presence of scanty amoebic cysts and ova of Trichocephalus, and a large number of ova of *Clonorchis sinensis*. By physical and radiographic examination the liver was not found enlarged. Analysis of the urine showed no trace of indican nor of bile pigments. No evidence could be gleaned of hepatic insufficiency. Dosing with glucose did not reveal any abnormal hepatic permeability for sugar. The first blood count gave the following percentages:

| | | |
|---|---|---|
| Neutrophil polynuclears | 56 | per cent. |
| Mononuclears | 30 | ,, |
| Lymphocytes | 6 | ,, |
| Eosinophiles | 6 | ,, |

On the patient's discharge after six weeks in hospital the percentages were respectively 66, 23, 6 and 4. Amoebae and Trichocephalus ova had disappeared and the eggs of the Clonorchis were very much fewer. The authors approve of GRALL's statement that infection with this parasite sets up a condition of invalidism and that death, when it supervenes, is from an intercurrent disease. The patient denied having ever eaten Annamese food. She had never, in particular, eaten molluscs of which the natives of Tonkin are very fond. Drinking water and the various vegetables consumed in Tonkin are, the authors think, unlikely sources of infection, in view of the extreme rarity of infection amongst Europeans.

The authors' treatment was based on the principle firstly of stimulating the liver secretion, in order to expel mechanically the parasites from the bile ducts. For this purpose calomel, urotropine and salicylate of soda were given. Secondly they sought to expel the parasites from the intestines by purgatives and enemata. Such a treatment started at the onset of infection appears to give appreciable relief.

H. M. H.

### Ankylostomiasis.

Stannus (Hugh S.). i. **Some Helminthological Observations in Nyasaland.**—*Jl. London School Trop. Med.* 1912. Dec. Vol. 2. Part 1. pp. 44-48. ii. **A Report to the Governor of Nyasaland Protectorate on Ankylostomiasis and other Helminth Infections.** 1912. Aug. [Received in Colonial Office, 1912, Nov. 16.]

These investigations were carried out mainly among the civil, military and prison population of Zomba. As regards ankylostome infection it is present in natives from practically all districts of the Protectorate. In the tables given by the author it is shown that the number infected is roughly proportional to the total number of men from any particular district. The figures for the troops bear this out. The figures relating to the military reservists also point to widespread endemicity throughout the Protectorate. The actual figures are:—26 per cent. of inmates of the Central Prison harbour ankylostomes; native troops 15·7 per cent.; reservists 18·6 per cent. Among the few women examined at the camp 38 per cent. were infected; but of twelve children under two years of age none was affected. The figures for the general population included both sexes and all ages over two years; 19 per cent. were infected, among whom were a number of children between two and five years of age. Excluding the few children under two years of age, of 493 persons whose stools were examined 22·2 per cent. were found to be infected. Bass has shown that by the ordinary method of examining faeces for ova, some twenty per cent. of cases are missed. Making such a correction the figure 42 represents the true percentage of infection. Turner found 50 per cent. of infections among natives recruited from Nyasaland, Mozambique, etc. for the Transvaal mines.

The degree of infection is important; 'carriers' must be distinguished from 'diseased,' *i.e.* those harbouring ankylostomes from those suffering from ankylostomiasis. Bass estimates that one egg per microscopical slide roughly indicates an infection with less than ten worms, while Nicol in India states that to produce effects on the host there must be 500 worms present for six months.

In a large majority of the author's cases there have been one to two eggs per slide with a maximum of seven. This points to a low infection, and such is confirmed by the results of treatment and expulsion of worms and post mortem findings. The usual number of worms expelled was three to ten, maximum fourteen. Only two autopsies had been obtained on patients whose faeces during life

contained ova. In one 25 worms were found, in the other nine. Of the 100 odd cases, fifteen complained of symptoms or showed signs of the infection. It is however very probable that slight grades of anaemia, loss of weight, joint pains, ineptitude for work etc. have passed unnoticed. A number of worms from the cases have been examined by LEIPER, who found both *Ancylostoma duodenale* and *Necator americanus*.

Evidence of infection with other helminths was obtained by finding the ova, in a comparatively small proportion of cases, of *Trichocephalus trichiura*, *Taenia* sp.? *Dibothriocephalus* sp.? and *Schistosomum haematobium*; in this in all cases the ova were lateral spined; none had symptoms referable to the infection present nor admitted ever having had symptoms of urinary bilharziasis. The larvae of *Strongyloides intestinalis* were also found in some cases. A rather remarkable point, the author notes, is the absence of any case of infection with *Ascaris lumbricoides*.

H. M. H.

JOYEUX (Ch.). **Le** *Necator americanus* **en Haute-Guinée. Notes d'Epidémiologie.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 843-846.

This parasite is very common in Upper Guinea. There are many carriers of the worm, but few patients suffering from ankylostomiasis. A few however shewed all the symptoms of miners' anaemia of Europe. In marked cases there is a high eosinophilia. The larvae develop in the mud at the margins of streams near villages. It is usually in such places that the natives deposit their faeces. Under the microscope this mud is found to contain various species of nematode larvae in large numbers, and evidently forms an excellent culture medium. Sand from the banks of running streams contained no larvae.

Above a certain degree heat prevents development of the larvae; while tropical sunlight rapidly kills them. The author made cultures of larvae using animal charcoal in Petri dishes. At different ages one set was exposed to sunlight and the other kept in the shade. At the end of from two to two and a half hours the larvae exposed to sunlight were all dead. Those kept in the shade were living, the air temperature for both being 43° to 38° C. Again, eight days old larvae placed in a zinc box and exposed to air temperatures of 38° to 43° C. were all found dead after four hours; the temperature inside the zinc case was higher than inside the cardboard box which was used for keeping the larvae in the shade during these experiments.

Two *Cercopithecus patas* were infected experimentally with Necator, by causing them to swallow cultures rich in larvae. The first monkey died after 33 days, when many Necator were found attached to the mucous membrane of the small intestine, which was very congested, with numerous mucosal haemorrhages. No other lesions were found. The second monkey died after 37 days; only 30 Necator (7 ♂, 23 ♀) were found in the small intestine. Examination of the stools before experimental infection had shewn them to be free of the parasite, which is very

rarely found, in nature, in this monkey in Guinea. Some of the nine days old culture, which (when ingested) infected the first monkey, was placed on the abdomen and inguinal region of a third *C. patas*. The animal lived 129 days. Its stools never contained ova and at autopsy no parasites were found.

The author tried many methods of treatment. He always obtained the best results from thymol finely powdered, followed by energetic purgation. He often used *eau de vie allemande* of the *Codex* (30 cm. for adults). This alcoholic fluid, when taken by children and adults who had received 2-4 gram. of thymol, never gave rise to toxic symptoms. Castor oil, like alcohol barred by classical rule, gave no harmful results, but was less successful. Such treatment, however, was never given more than once in one day.

H. M. H.

STILES (H. Wardell) & ALTMAN (W. L.). **Proportion of Males to Females in the American Hookworm** (*Necator americanus*), **Based on 13,080 Worms from 102 Cases.** *U.S. Public Health Rep.* 1913. Jan. 3. Vol. 28. No. 1. pp. 7-20.

The point had been raised by LEICHTENSTERN in 1885 that by counting the male and female hookworms passed by a patient and reckoning the proportion the clinician had a practical clue to the completeness or incompleteness of the cure effected. This point was based on the premises that the males and females were present in relatively fairly constant proportion and that the males are more difficult to expel than the females. This view was based upon *Ancylostoma duodenale* and the authors deemed it wise to test it as applied to *Necator americanus*. Various authors are quoted whose observations establish the general opinion that with *A. duodenale* females are much more numerous than males. From their own careful observations on 102 cases, a detailed statistical account of which is given in this paper, Stiles and Altman conclude that the estimation of the sexes in cases of infection with *N. americanus* with a view to determining whether or not cure is complete, is a method much more tedious, time consuming, and less reliable than microscopic examination of the stools. Of the 13,080 specimens of *N. americanus* collected from 102 cases 46 per cent. were males and 53 per cent. females. The proportion for different cases varied. Of the 102 cases 37 presented an excess of males, nine showed equal number of males and females and 56 an excess of females. The greatest number of worms collected from any one case was 2,277, the smallest 1, and the average 135.

From 75 to 95 per cent. of the worms of a given course of treatment may be passed within twelve hours after the early (6 a.m.) dose of thymol, and worms may continue to pass for several—at least six—days following.

Therefore treatment once per week is as frequent as it seems either necessary or wise to give it. Even if eggs be found on the fifth day after treatment a second course may be entirely unnecessary.

H. M. H.

Stiles (Ch. Wardell) & Leonard (Geo. F.). **Hookworm Disease. Number of Treatments and Number of full Doses of Thymol administered in 61 Hospital and 22 Home-Cured Cases of Hookworm Infection.**—*U.S. Public Health Rep.* 1913. Jan. 17. Vol. 28. No. 3. pp. 119-124.

The authors state that the term 'cured' means that a week or more after treatment microscopic re-examination of the patient gave negative results.

Their study of the cases, details of which are given in this paper, leads the authors to the following conclusions:—

1. The desire to increase the dose of thymol considerably in excess of the present generally accepted maximal doses is natural, in view of the fact that so many patients fail to follow out the treatment until all worms are expelled, and therefore a considerable number of persons continue to distribute the infection.
2. Many cases of hookworm infection are cured by less than one maximal dose for the age group in question.
3. When thymol treatment is properly carried out, *viz.*, when given under adequate precautions and the margin of safety to the patient regarded, the present maximal doses seem to be entirely safe.
4. With illiterate and unreliable patients, if the thymol dose in home treatment be increased it is at the distinct risk of exposing to unnecessary danger these patients who may be cured completely with less than the present maximal dose.
5. Eleven deaths have occurred in the United States because of following thymol with castor oil instead of with salts; or because of carelessness on the part of the patient or his family. It is therefore unwise to have a general increase in the size of the dose of thymol for home treatment cases. It is even better to cut the doses down below the present maximal dosage.
6. With increase of sanitary privies, or with repetition of smaller doses, the same eventual curative result will be obtained as would follow an increased single dose of thymol. While the former plan will take a longer time it involves less risk and the improved sanitation will give additional results in other diseases.

The basic maximum doses of thymol noted in this paper are 5 to 9 years old 15 grains; 10 to 14 years old 30 grains; 15 to 19 years old 45 grains; 20 to 59 years old 60 grains, and 60 years old 45 grains.

H. M. H.

Leys (J. F.). **Diagnosis and Dosage in Hookworm Cases in the Navy.**—*U.S. Naval Med. Bull.* 1912. Oct. Vol. 6. No. 4. pp. 552-555.

Ninety-six cases of hookworm infection occurred in Southern-bred recruits received at the training station during 1911. The author's experiences lead him to formulate the following conclusions.—1. Reliable diagnosis can be made by examining three slides representing nine portions of a natural stool. 2. Treatment—First day, bed and light fluid diet, 1 oz. Epsom salts at 10 a.m.; second day, in bed, thymol finely triturated, in capsules, grains 30 at 6, 7, and 8 a.m., 1 oz. Epsom salts at 10 a.m. Save all stools, count parasites. 3. If 150 parasites or more are found, three more such courses are likely to be required; if 50 parasites or more, two more courses are required; if less than 50 parasites then one more course is necessary. Following this rule all parasites will have been expelled in the vast majority of cases, and not more than one or two remain in any case.

4,061 parasites were removed from the 96 patients, an average of 42 per patient. The first course of treatment removed 3,585 or 88 per cent.; the second course 353—9 per cent.; third course 116—3 per cent. A fourth course required by only three patients expelled seven worms. In 27 cases in which the total number of worms varied from two to 144 all were expelled by the first course of treatment.

H. M. H.

LAW (W. F.). **A Short Account of the Spread of Ankylostomiasis in British Guiana and the Methods adopted for its Prevention.**—*Trans. Soc. Trop. Med. & Hyg.* 1912. Dec. Vol. 6. No. 2. pp. 33-43.

The author states that British Guiana, lying close to the equator, with an annual rainfall of 80 to 120 inches, has a hot, damp climate, with very slight variations in temperature, the mean being about 82° F. The inhabited part of the country is absolutely flat, and in many parts below sea level. The main industry is sugar cultivation which is carried out almost entirely by East Indian coolies brought from Calcutta under indenture. According to DANIELS, there is some evidence of the existence of the disease in the colony as long ago as 1846; *i.e.*, ten years before the first introduction of East Indian labour. In the Surgeon-General's report for 1901-2 attention was drawn to its increasing prevalence. From then a systematic crusade against the disease may be said to have begun. Both *Ancylostoma duodenale* and *Necator americanus* are found. Examination showed that fifty to seventy per cent. of coolies were infected on arrival, and from 2,500 to 5,000 immigrants had been imported every year for more than fifty years. Up till lately latrine accommodation for labourers was quite unknown. In their absence the coolie, most regular in his habits, proceeds before going to work in the early morning, to some waste piece of ground, preferably one covered with low bush, and there defaecates. In the hot damp climate such ground soon becomes highly infective, and as the coolies' feet and legs are quite unprotected, he readily acquires the disease. The use of latrines does away with this source of infection. The plan of campaign of the Medical Department was, 1. Examination of stools of all patients admitted to estates' hospitals. 2. Examination of stools of all newly arrived immigrants. 3. Treatment at earliest possible opportunity of all individuals found to be infected. 4. Report to Surgeon-General of results of 1 and 2 and publication of the figures in the Official Gazette. 5. Preventive treatment.

As regards this last no real progress was made up to 1904.

Points of practical importance are: 1. The latrines must be placed at a convenient distance from the labourers' dwellings with a good dry path leading to them. 2. Accommodation must be sufficient for the population. 3. Latrines must be kept clean. 4. Construction must be such as to suit the class for which it is intended. In this case the East Indians bring in with them a bottle of water for washing; and this was possible without messing

the place for the next comer. 5. Distance from opening in latrine to trench or bucket must be sufficient to prevent any splash coming up on the person defaecating. The results have been a steady diminution in the number of cases treated on the estates, a lessened severity of disease in those requiring treatment, and a large economic saving.

H. M. H.

NICOLL (William). **The Anaemia of Ankylostomiasis.**—*Brit. Med. Jl.* 1912. Oct. 26. p. 1097.

The Blood Volume in Hookworm Disease. From his experiments, which are not detailed, the author draws the following conclusions:

1. Hookworm disease in dogs is not analogous to the disease in man. In the latter the disease is essentially chronic and progressive, gradually leading to a fatal termination. No great degree of resistance is acquired though some individuals are less susceptible than others. Persons of all ages are susceptible to infection. In the dog the disease is very acute and rapidly fatal. Only dogs under six months old succumb to the disease, though all dogs are more or less susceptible to infection. In older dogs, infection cannot be pushed beyond a certain point, even with long continued administration of infective material. In these some degree of anaemia is slowly produced and gradually recovered from; the animal regaining its normal state even though infection with the worm persists. The infection may last for over two years.

2. The anaemia in young dogs is characterised by great loss of weight, emaciation, prostration, intestinal haemorrhage, greatly reduced temperature, and accelerated and irregular heart beat. These symptoms were present to a less extent in older dogs suffering from a minor degree of anaemia. In the latter the erythrocytes were rarely reduced in number to any great extent, but the haemoglobin fell, in some cases, to as low as fifty per cent. of normal. In the acute disease of young dogs the erythrocytes were observed under one million per cmm. and the haemoglobin ten per cent. In both cases the blood picture was characterised by the large number of erythroblasts, often of large size, and polychromatophilia. Eosinophilia was not a constant sign either of infection or of disease; and was, in fact, observed on only a few occasions.

3. Infection is generally accompanied by fairly profuse intestinal haemorrhage, which is most marked in the early stages, and tends to disappear later.

4. The blood volume of dogs suffering from the minor degree of hookworm anaemia is not materially altered, but if anything, is somewhat diminished. The oxygen capacity of the blood per unit of body weight is also on the average somewhat decreased. In the acute stage of the disease the blood volume appears to be decidedly reduced.

5. In the early stages of infection the worms attach themselves to the lower reaches of the ileum but in the course of time they are found further forward.

6. Cats are much less easily infected than dogs, while monkeys and man were found to be insusceptible to infection with the dog hookworm.

H. M. H.

## TRICHOCEPHALIASIS.

BERRIO (L. Posada). **Contribution à l'Etude de la Trichocéphalose et de son Traitement par le Latex d'Higueron.**—*Rev. de Méd. et d'Hyg. Trop.* 1912. Vol. 9. No. 3. pp. 178-184.

The author gives a detailed account of his many cases of Trichocephalus infection in Colombia, the lesions caused by this parasite, and the invariably successful effect of treatment with "Latex d'Higueron." This is a variety of *Ficus* and is identified by

E. Robledo as *Ficus glabrata.* The author agrees with Robledo that its active principle resembles that of *Ficus doliaria.*

The author concludes from his observations that the latex is also a good parasiticide for Ascaris, Strongyloides and also for Taeniidae.

He holds that no matter what the disease one ought to search for the presence of intestinal parasites and bring about their expulsion. For though it is well known that there are many who, while harbouring these parasites, enjoy good health, yet at some time or other the parasites can produce serious effects. The best parasiticide for expelling Trichocephalus is the latex d'higueron. In Médellin (Colombia) the Trichocephalus is not only the most common but also the most dangerous of intestinal worms. For adults the dose of the latex is 30-40 grammes.

H. M. H.

## Ascariasis.

Degorce (A.). **Envahissement du Foie par de Nombreux Ascaris. Abcès Multiples du Foie.—Péritonite.—Mort.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1912. Dec. Vol. 3. No. 10. pp. 664-666. With 3 figs.

In this paper, which is well illustrated, the author gives details of a case of illness in a child seven years old, admitted to the hospital for natives at Hanoi for severe abdominal pain. These pains had lasted for two months and been severe for three weeks previously. They came in paroxysms. In the left subcostal region could be felt a hard rounded mass the size of a mandarin orange, continuous with the liver. There was profuse sweating at night. Constipation was marked and the faeces were found to contain ascaris eggs. A liver abscess was suspected but as the diagnosis was not certain and the child's condition was very bad no immediate operation was decided on. It soon became apparent that peritonitis had set in, and death ensued. At autopsy general purulent peritonitis was found. One ascaris was found in the peritoneal cavity beneath the liver. The liver was adherent to the diaphragm and its surface covered with yellowish bosses. At its anterior border was the opening of an abscess of the size of an egg. On section the liver was found to be riddled with small abscesses the size of a nut. In these abscess cavities were numbers of ascaris. The much dilated bile ducts were full of them and they were found everywhere in the liver. Their number was not counted. All were small and had doubtless entered the liver when their development was little advanced. None were found in the gall bladder. Histological examination revealed lesions of chronic cholangitis with at certain points commencing biliary cirrhosis.

H. M. H.

Henry. **Appendicite et Ascarides.**—*Rev. de Méd. et d'Hyg. Trop.* 1912. Vol. 9. No. 2. pp. 130-131.

The author has noticed on several occasions deaths resulting from convulsions, without other symptoms, in children who harboured ascarides. He believes that convulsions were caused by the presence of the parasite in the appendix. He gives details

of two cases supporting this view. One child, two and a half years old, very emaciated, was found to have ascaris ova in the stools. One worm escaped by the mouth, and five in the faeces after a vermifuge. The child continued to pass ascaris ova, was suddenly seized with convulsions and died. At autopsy the only possible cause was a large ascaris completely filling the appendix.

The second child, fifteen months old, also with ascaris ova in the stool, was treated as the first case without any worms being passed. Death resulted from convulsions. At autopsy the appendix was again found to be occupied by a worm and in addition worms were found in the ileum and colon.

These observations tend to shew that vermifuges are useless for the removal of worms in the appendix. Surgical intervention is indicated.

In the discussion on this subject Tanon recalled that ascaris appendicitis has been described in classical treatises. Henry's cases were rare. Analogous cases of ascarides in the appendix had however been recorded in Haiti.

H. M. H.

Lamoureux (A.). **Un Cas d'Ascaridiase Mortel.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 842-843.

A young soldier, native of Grande-Comore, was admitted to the military hospital at Majunga (Madagascar) on 10th October, 1912. He had been taken with syncope during manoeuvres, and on admission his condition resembled somewhat that found in the second week of typhoid fever; T. 39° C., low delirium, vomiting, distended abdomen very tender to pressure. On the third day, symptoms persisting, the patient vomited up two *Ascaris lumbricoides* 10 cm. long. On the fourth and fifth days after thymol treatment ten ascarids, 10-15 cm. long, were passed by the anus. Symptoms did not improve and on the sixth day the patient died in a state of collapse.

Necropsy revealed the following—One ascaris in the oesophagus, the stomach and first part of small intestine empty. In the second part of the small intestine and lower down ascarides were found in packs of ten to fifteen worms. The number of these increased as one approached the ileo-coecal valve, near which huge packs were found. The large intestine contained none. Upwards of 132 worms were removed from the alimentary canal. Although the worms were in packs, at no point did they form a dense enough mass to block completely the lumen of the gut.

At the places where the ascarides lay were found a number of dark red patches, situated beneath the mucous membrane and raised one millimetre above its level, circular or elliptical in outline, with a smooth non-excoriated surface. They varied in size up to 6 cm. long by 2 cm. broad. There were more than 30 of these at the spot where the worms were in greatest number. At this last point there were peritoneal adhesions between the coils of intestine and the body wall.

There was no sign of perforation of the gut, and no wandering ascarides were found in the peritoneal cavity or in the abdominal and thoracic organs, all of which seemed macroscopically to be normal.

H. M. H.

## Oxyuriasis.

Brau. **De l'Oxyurose en Indochine.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1912. Nov. Vol. 3. No. 9. pp. 582-584.

The author states that the presence of oxyuris has been seldom recorded in natives of Indo-China. Mathis and Léger do not mention it. Jouveau-Dubreuil in 1910 recorded one case and concluded that it was extremely rare, at any rate among Asiatics.

By administering thymol however Brau has found many individuals among the "tirailleurs" harbouring this parasite and can now affirm its presence in natives of Cochin-China. Thymol appears to be the most efficient parasiticide. No males were ever found. Careful examination of the stools on no occasion revealed the presence of ova, a circumstance which may account for the existence of this worm having been hitherto overlooked. In the "tirailleurs" the parasites appear to cause a slight degree of anaemia. In children they set up a grave form of gastric derangement and even dysentery. In several cases expulsion of the worms caused the disappearance of the most diverse symptoms.

In contrast to the case of native children, eggs were often found in the stools of European children. In adults some degree of eosinophilia was found, more marked than in cases of ascaris infection.

H. M. H.

## General and Unclassed.

Bell (J.). **Intestinal Parasites.**—*Far Eastern Assoc. Trop. Med.: Trans. Second Biennial Congress held at Hong Kong.* 1912. pp. 115-117. With 1 plate.

The author examined 850 cases in Hong Kong: 23·2 per cent. Europeans, 29·8 per cent. Indians, 47 per cent. Chinese and Japanese. Of this number 41·3 per cent. were infected: 13·7 per cent. Europeans, 22·5 per cent. Indians and 63·8 per cent. Chinese. Multiple infection, in several cases eggs of three species being found together, occurred in 25·5 per cent. 111 females were examined; they suffered ten per cent. more than men. *Ascaris lumbricoides* was found in 46·6 per cent. One child died from intestinal obstruction caused by a mass of over twenty worms completely blocking the small intestine. Another child whose symptoms exactly resembled those of chorea, a rare disease in Hong Kong, speedily recovered after the expulsion of about ten worms. *Trichocephalus dispar* occurred in 26·2 per cent. It was the commonest worm in Europeans. *Ancylostoma duodenale* was found in 13·3 per cent. *Clonorchis sinensis* occurred in 12·9 per cent.; they were only found three times in Indians and never in Europeans.

Of thread worm there were only three cases, all in European children. *Taenia solium* was found once, in a European who probably acquired infection elsewhere.

H. M. H.

KINDLEBERGER (C. P.). **Intestinal Parasites and Diseases found in Guam.**—*U.S. Naval Med. Bull.* 1913. Jan. Vol. 7. No. 1. pp. 86-93.

The author records in interesting statistical tables the metazoan and protozoan intestinal parasites infecting the people of Guam, the largest island of the Marianas group. The list of helminthic parasites includes *Ancylostoma duodenale, Necator americanus, Ascaris lumbricoides, Trichuris trichiura, Strongyloides stercoralis,* and *Oxyuris vermicularis.* No tapeworms were found.

H. M. H.

RANSOM (Brayton Howard) & HALL (Maurice C.). **The Action of Anthelmintics on Parasites located outside of the Alimentary Canal.**—*U.S. Dept. of Agriculture: Bureau of Animal Industry. Bulletin* 153. 1912. Sept. 25. pp. 1-23.

After a careful historical review of the subject under consideration, with many abstracts describing experiments and observations of various workers, the authors give the following summary.

Results following the administration of *male fern* have been claimed as follows:—

Successful in six cases of human cysticercosis (*T. solium*), (four subcutaneous, one subcutaneous and cerebral, and one subcutaneous and ocular) and in two cases of human echinococcosis (one hepatic and one pulmonary); a total of eight cases of human somatic taeniasis.

Unsuccessful in five cases of ovine cerebral coenurosis, two cases of leporine general echinococcosis and one case of porcine muscular and ocular cysticercosis; a total of eight cases of somatic taeniasis in lower animals.

As regards the treatment of hepatic distomiasis in lower animals, the administration of anthelmintics is declared by various authors to have been effective in fourteen detailed experiments and in two other sets of tests with the number of animals not given.

In the case of venal distomiasis, male fern has been commended as being efficacious, with no data discovered by the authors as to autopsies showing that the death of the flukes in the blood vessels actually follows administration of male fern. For human bilharziasis, SANDWITH is quoted.

"The liquid extract of male fern, in doses of fifteen minims three times a day, is the only drug of known value, for, though it does not expel the parasites, it seems to weaken their power of doing harm; it diminishes haematuria, allays vesical irritation and reduces the number of eggs passed in the urine and faeces."

JOANNIDÈS (1911), after administering salvarsan in eight cases of bilharziasis, claims that this drug destroys *Schistosomum haematobium* and its eggs, and thus brings about a cure of the disease.

Loos looks upon the cures reported by Joannidès as resulting from an artificial retention of the eggs in the tissues, causing thereby a suppression of symptoms, not a cure of the disease. He points out that the parasite itself in the blood vessels has practically no direct pathological effect, and that the lesions of the disease are due to the passage through the tissues of bladder, rectum, etc., of vast numbers of the parasites' eggs.

Conor (1911) tried salvarsan in one case of bilharziasis; eggs containing living miracidia were passed in the patient's urine every day but one, for a month after treatment.

Fülleborn and Werner (1912) have also tried salvarsan in a case of bilharziasis, with like negative result.

Day and Richards (1912) report three cases in which salvarsan was administered with no effect on the passage of living ova, or, in two cases examined, on the eosinophilia.

Carbon bisulphide and male fern were found by the authors to be inefficacious in at least six cases of intestinal and extra-intestinal thysanosomiasis.

They remark that there is much more likelihood of cases being published where the administration of a medicine is followed by apparent cure of diseases than where evident failure has resulted. Critical examination of the cases will reveal other objections. None of the cases of distomiasis specifically eliminate the possibility of the natural death and spontaneous evacuation of the flukes, the usual ending of the yearly life cycle, although the use of control animals would meet this objection.

None of the Joannidès cases was followed by post-mortem examination, and so far as case records are available, in no case of bilharziasis treated by male fern has an autopsy been available subsequently, to ascertain if the drug had killed the flukes. The subject is worth further investigation. Improved technique and better drugs have marked great advance in the treatment of some protozoan diseases, and at present it is not necessary to conclude that metazoan parasites outside the digestive tract cannot be killed by selective action of drugs without injury to the host.

H. M. H.

Leiper (R. T.). **Gapes in Man, an Occasional Helminthic Infection: A Notice of its Discovery by Dr. A. King in St. Lucia.**—*Lancet.* 1913. Jan. 18. p. 170.

Writing from Calabar the author records the receipt, just before leaving England, from King in St. Lucia, of a male and female *Syngamus.* The worms were obtained from a woman who had chronic cough. The patient said the worms were coughed up with blood. The worms were *in copula.* The presence of ova in the buccal cavity of the male was suggestive of there having been other worms present of the same species. The ova were identical with those in the uterus of the female. Leiper thinks it highly probable that this Syngamus is a purely

accidental infection of man with a parasite common in one of the domesticated animals. *Syngamus trachealis* is a very common parasite in poultry and game birds. He does not know of any undoubted instance of the infection of a mammal with a normally avian parasitic nematode. Unless King had been misled by a neurotic patient he is to be congratulated on a most suggestive and interesting find.

H. M. H.

Weinberg (M.) & Mlle. Keilin. **Une Maladie de l'*Ascaris megalocephala*.**—*Compt. Rend. Soc. Biol.* 1912. Aug. 2. Vol. 73. No. 28. pp. 260-262.

The authors describe lesions found in the ascaris of the horse. These are large, hard plaques, yellowish grey in colour and situated more especially in the anterior third of the worm.

Microscopic examination of sections through the lesion and body wall of the worm showed an inflammatory process extending to the subcuticular tissue down to the muscles, the cuticle itself being sometimes ulcerated. It causes the death of the worms. Certain appearances incline the authors to suspect a protozoon as causative agent—a matter on which they are pursuing further researches. They think that this dermato-myositis of the ascaris may prove of importance in helminthic pathology, and remark that it will be of great interest if a like disease be found in the human ascaris.

H. M. H.

Walker (H. F. B.). **Hydatid of the Submaxillary Gland.** [Memoranda.]—*Brit. Med. Jl.* 1913. Jan. 18. p. 117.

The patient, a little Kaffir girl, presented a somewhat pendulous tumour immediately below the left ramus of the mandible. Six years had elapsed since the tumour was first noticed, and it had caused no symptoms. The cyst was removed entire, and contained 79 cc. clear fluid, many scolices, hooklets, and some small daughter cysts. The specific gravity of the fluid was 1005, without albumin.

H. M. H.

Railliet (A.), Henry (A.), & Joyeux (C.). **Sur Deux Trématodes de Primates.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 833-837.

The authors give a description of a trematode from the chimpanzee. 300 specimens were obtained by Brumpt from the hepatic and pancreatic ducts of an adult female. It is compared with other known species of the genus *Eurytrema* and is named *Eurytrema brumpti* (n. sp.).

A short description is also given of a trematode which the authors identify as *Watsonius watsoni* (Conyngham 1904). Six specimens were obtained by Joyeux from the coecum of an old female *Cercopithecus callitrichus*, E. Geoff.

H. M. H.

POMELLA (C.). **Lésions provoquées par les Téniotoxines chez le Cobaye.**—*Compt. Rend. Soc. Biol.* 1912. Nov. 22. Vol. 73. No. 32. pp. 445-447.

The author prepared extracts of *Taenia perfoliata* and *Taenia plicata* from the horse. He found that intravenous injection of 2 to 3 cc. caused death of the guinea-pig more often with the extract of *plicata* than with that of *perfoliata*. Death ensued in from one to 24 hours. Some guinea-pigs survived. Some minutes after the injection the animals show trembling, mastication, dyspnoea, diarrhoea, incoordinate movements and paralysis of the hind quarters.

With subcutaneous injections of 1-2 cc. given every other day death follows after three to eight injections, and blood examination shows that it is due to an intoxication and not to secondary infection. Those animals that survive repeated injections are very wasted. Gravid females abort after a few injections.

Post mortem examination of an animal killed, or dead spontaneously, reveals at the place of injection a haemorrhagic focus and some oedema. Usually all the organs are congested and may show haemorrhagic foci. The liver shows fatty degeneration, often marked. In severe cases the kidneys show some fatty degeneration. The supra-renal capsules are much enlarged and congested. There is also enlargement of the lymphatic glands. On microscopic examination the spleen is found full of macrophages filled with red blood cells. The lymph glands contain iron bearing granules and the bone marrow a large number of eosinophile myelocytes.

H. M. H.

HENRY (A.) & CIUCA (A.). **Recherche d'Anticorps spécifiques dans le Sérum de Lapin porteur de *Coenurus serialis*.**—*Compt. Rend. Soc. Biol.* 1913. Jan. 10. Vol. 74. No. 1. pp. 14-16.

For antigen the authors used (1) the fluid from the cyst, (2) aqueous extract of membrane and scolex, and (3) aqueous extract of *Taenia serialis*. These last two however sometimes gave fixation with the serum of normal rabbits and so were given up. Distinct fixation reaction was obtained twice with the sera of nine carriers. From this low percentage it might be thought that the same phenomenon occurred for *Coenurus serialis*, as WEINBERG had described for carriers of hydatid cysts—*viz.* normally the parasitic fluid does not, or only with difficulty, get through the wall of the cyst. The absence of antibodies is then easily explained by the non-absorption by the host of antigen. Antibodies appear at once when traumatism allows of the escape of parasitic fluid into the host's tissues. 10-15 cc. of fluid obtained by puncture of their own cysts were injected into rabbits whose serum had given a negative reaction. Two out of three rabbits thus treated, tested after 65 days, gave distinct positive reactions, the third only a slight reaction. This last gave a strong positive reaction after a second injection. A fourth and fifth rabbit were injected with fluid from their own cysts, but after the cysts had been removed

quite intact. In a sixth and seventh the cysts were slightly incised *in situ* so as to allow the free escape of the fluid into the subcutaneous tissue. In all the reaction of fixation was very markedly shown at the end of three weeks.

The serum of rabbits harbouring *Coenurus serialis*, or injected with the fluid from that parasite, does not give fixation reaction with fluid from hydatid cysts. The authors tested the serum of two dogs infected with numerous *T. serialis*. Negative results were obtained both with fluid from the cysts and with aqueous extract of *T. serialis*.

H. M. H.

---

# CHOLERA.

## Epidemiology.

*Conseil (E.). **L'Epidémie de Choléra de Tunis et de sa Banlieue pendant l'Année 1911.**—*Arch. de l'Inst. Pasteur Tunis.* 1912. No. 3. pp. 144-191.

An elaborate account of this epidemic, which involved 688 persons with 459 deaths. The case-mortality was higher in the very young and very old than in those of the middle period of life. The great majority of the cases were due to direct contact with the sick or with carriers, a mode of spread favoured by the habits of the people. Indirect contact, as by soiled linen or food, caused only a few cases, and water infection took scarcely any share in the epidemic. Prophylactic measures were directed chiefly to the isolation of the sick and of carriers, and, thanks probably to the energy with which they were carried out, the number of cases did not exceed 19 a day in a population of over 200,000.

The incubation period, in such cases as it could be accurately determined, did not exceed 4 days, was most frequently 1 or 2 days, and in a considerable proportion was less than one day. The number of contacts examined bacteriologically was small (only 160), and only 5 carriers were found, in one of whom the vibrios persisted for 9 days. In the sick the vibrios usually disappeared by the 9th or 10th day; but in 6 cases they remained for a longer period, once up to the 20th day, and in these cases the disease ran a protracted course.

J. Henderson Smith.

Sergent (Edm.), Nègre (L.), Bregéat, & Vivien. **Notes Bacteriologiques relevées pendant l'Epidémie Cholérique de 1911 en Oranie.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 790-791.

Cholera broke out at a farm previously free ten days after the arrival of a native woman from an infected district. The woman was found to be a carrier, and she continued to excrete the vibrios in large numbers from the 28th November 1911, when the first examination was made, till the 20th January 1912 without herself at any time showing any symptoms whatever. Of 8 persons with whom she came in contact at the farm 7 were infected, with 4 deaths; and in one of these the vibrios were discovered in the faeces 24 hours before the appearance of symptoms.

The authors also note the absence of any cases in a village of over 5,000 inhabitants, supplied with water which came from an infected district and was found to contain the typical agglutinable vibrios for over two months.

J. H. S.

---

* In collaboration with Ortona, E. Lévy, Gordon, Calamida, Cortesi, Bouhageb, Cattan, Cassuto, Fraudet & Bienassis.

Simond (P. L.) & Vallery-Radot (Pasteur). **L'Epidémie de Choléra de Constantinople de Novembre-Décembre 1912.**—*Gaz. des Hôpitaux Civils et Militaires.* 1913. Jan. 21. Vol. 86. No. 8. pp. 117-120.

The cholera which recently attacked the army and people of Turkey includes two epidemics, which should be kept distinct though one was derived from the other. The first of these is the explosion amongst the troops. Cases appeared in the army on the right wing towards the end of October, probably brought over by troops from Anatolia. But they were not numerous until after the defeat at Lule-Bourgas, when the disease spread with extraordinary vehemence through the hungry, cold and exhausted troops as they retired. Everything favoured its propagation. The military camps at Derkos and Hademkeui presented the appearance of vast cholera-camps, the ground was covered with infected material, the available water-supplies were contaminated and adequate care or isolation was impossible. The sanitary services were choked with cases which they might not send to the rear, and they formed a separate camp at St. Stefano into which over 16,000 cases were sent. The real numbers of the sick are difficult to estimate. At the height of the army epidemic during the second fortnight of November probably 2,000 cases a day is a fairly correct estimate. As soon as the lines at Tchataldja were properly formed and some regulations could be enforced, the numbers dropped at once to under 200 a day, and soon cases became almost rare. The epidemic was almost pure cholera. There were some cases of dysentery certainly, but relatively few and scarcely any typhoid or typhus.

The second epidemic was that of Constantinople itself and its immediate neighbourhood. This was produced partly by infected soldiers sent back wounded, but to a greater extent by peasants originally infected from the troops. These people, fleeing before the Bulgarians, came in enormous numbers to Constantinople and the shores of the Bosphorus, whence they were transported to Asia. At first the cases were almost all amongst these peasants (and some troops), but as time went on, the peasant cases became fewer and large numbers of the civil population of Constantinople were attacked. This epidemic reached its maximum about the first fortnight of December, but the official figures give no real idea of the number of cases, which were said to total on December 27, 2,260. It is noticeable that in Constantinople itself the water was never infected.

J. H. S.

## Diagnosis.

Schürmann (W.) & Abelin-Rosenblat (S.). **Die bakteriologische Choleradiagnose auf Grund von Prüfungen neuerer Anreicherungs- und Differenzierungsmethoden.** [Recent Enrichment and Differential Methods in the Diagnosis of Cholera.]—*Medizinische Klinik.* 1913. Jan. 26. Vol. 9. No. 4. pp. 138-142.

As the result of the comparative examination of various methods of isolation and identification the authors come to conclusions which may be summarised as follows. The peptone-water method

is indispensable, and should be used along with other methods. Enrichment in bile (OTTOLENGHI) is fairly good, but if the number of vibrios is small, their growth may be suppressed or considerably delayed. BANDI's method of growing the material in fluid media to which dilute specific serum is added, may on occasion prove of value but is frequently unreliable, and the fluid alkaline blood-medium, suggested (but not recommended) by DIEUDONNÉ, is of little use. DIEUDONNÉ's solid medium, on the other hand, is excellent, and was not found to lower the agglutinability of the vibrios. PILON's modification of this medium appears also to be good. The experiments described in this paper follow the plan usually employed in similar investigations.

J. H. S.

RIVAS (D.) & SMITH (Allen J.).—**The Detection of Cholera Bacillus from Faeces & Water in Twenty-four to Forty-eight Hours.**—*New Orleans Med. & Surg. Jl.* 1912. Oct. Vol. 65. No. 4. pp. 273-275.

The suspected material is plated on litmus-lactose-agar and incubated for 18 hours at 37° C. Suspicious colonies are then inoculated into trypsinised peptone bouillon (for the preparation of which reference is made to a work of the authors in the *Centralbl. f. Bakt.* Vol. 63.) and incubated for 6 hours. The cholera-red reaction may then be tested on this fluid, and if positive gives fair evidence that cholera is present, when taken in conjunction with the morphology and staining characters of the organism. This result is obtained in 24 hours, but subcultures on the usual media for the other recognised tests, made from the trypsinised bouillon before testing for cholera-red, will enable a complete identification to be made in 24 hours more.

J. H. S.

## TREATMENT.

EMMERICH (R.). **Zur rationellen Therapie der Cholera Asiatica.** [The Rational Treatment of Cholera.]—*Münch. Med. Wochenschr.* 1912. Nov. 26. Vol. 59. No. 48. pp. 2609-2611.

Emmerich sees in the successful results which have attended ROGERS' method of treatment (hypertonic injections of saline and oral administration of permanganates) further evidence in support of his view that the severe symptoms in cholera are due to the nitrous acid and nitrites formed by the organisms in the intestine. The injections replace the enormous quantities of alkaline fluid lost through the bowel in an attempt of the body to neutralise and wash out the acid poisons; and the effect of the permanganate is to oxidise these poisons in the stomach and gut into harmless nitrates. He states that the permanganate is there converted by the organic substances present into colloidal peroxide ($MnO_2$), which oxidises the nitrous acid at the moment of its formation; and he accordingly recommends instead of the permanganate a preparation of such colloidal peroxide. This preparation, which is stated to be quite harmless, is to be taken as a

drink by the patient freely. Reconversion of the nitrate into nitrite is not to be feared, as the vibrios are already greatly reduced in nitrite-forming power by the previously formed nitrite!

In the early stage of the disease the best treatment is a nitrate-free diet, but he has had good results from the oral administration of 1 per mille amidosulphonic acid as a drink or 1 per cent. in small quantities hourly.

J. H. S.

### Carriers.

Jatta. **Les Porteurs de Germes et leur Importance dans l'Epidémiologie et la Prophylaxie du Choléra.**—*Bull. Off. Intern. d'Hyg. Pub.* 1912. Nov. Vol. 4. No. 11. pp. 1995-2005.

During the 1911 epidemic at Naples 10 per cent. over all of healthy "contacts" were found to be carrying the vibrio of Koch. The numbers varied greatly in different cases. In some instances none or few of the contacts associated with a case were found to be carriers, in other instances most or all of the immediate contacts were infected, and in the latter it was nearly always found that the infection was conveyed through a common food-supply. The organisms found in carriers were no less virulent than those isolated from actual cases, but they were present always in smaller numbers. This fact, combined with the absence of diarrhoea in the carrier, reduces the danger which they bring to the community; but that the danger is real is shown by a number of examples which are given. Thus, in various institutions case succeeded case until a systematic examination of all inmates was made, when the presence of one or more carriers was discovered, and immediately on their isolation cases ceased. If no such examination and isolation were carried out, the cases continued, and in places where examination was made before admission to the institution, no cases occurred.

Healthy carriers usually stopped excreting the vibrios in 3-5 days, but 15 per cent. continued to carry them for 6-12 days. Whether those who carried for more than 5 days were really mild cases of the disease could not be definitely decided; but Jatta is satisfied that the period of 5 days usually taken as sufficient is not enough, and in practice carriers were kept isolated until repeated examination showed them to be free. If a carrier became subject to a gastro-intestinal disturbance from some other cause, he might develop cholera, and in this fact perhaps lies the explanation of those cases which develop several days after the last contact.

In the Naples epidemic 90 per cent. of the cases were due to infection through direct communication with patient or carrier. Even when infection occurred through taking contaminated food, the presence of a case or a carrier was nearly always demonstrated in connection with the food-supply, as in the kitchen or dairy, etc.

An account is given of the measures adopted to check the spread of the disease. These follow the recognised lines and were thoroughly carried out, directed in principle rather against the human source of infection than against other things.

J. H. S.

GREIG (E. D. W.). **Recent Research on Cholera in India.**—*Indian Med. Gaz.* 1913. Jan. Vol. 48. No. 1. pp 8-11.

After referring to the frequent occurrences of cholera vibrios in the gall-bladder of fatal cases Greig states that he examined a number of convalescent cholera patients who were about to leave hospital, and found 36 per cent. of them still excreting the vibrios in their faeces, in one case 30, in another 44 days after the acute attack. He found that the serum of such cases agglutinated, while that of convalescents without vibrios in the faeces did not agglutinate. Of 27 "contacts" at Puri 6 apparently healthy persons were found to be carriers. Greig describes a clear case of infection being conveyed into a jail by a carrier; and states that during the epidemic at Puri cholera was found in flies both on the external surfaces and in the alimentary tract.

J. H. S.

## CHOLERA IN RELATION TO OTHER ORGANISMS.

PANE (Domenico). **Antagonismo tra Microrganismi isolati dalle Feci ed il Vibrione di Koch. Virulenza del Vibrione di Koch isolato da Portatori. Un Vibrione Acquatile.** [Antagonism between the Vibrio of Koch and Organisms isolated from Faeces. Virulence of the Koch Vibrios isolated from Carriers. A Water Vibrio.]—*Riforma Medica.* 1912. Nov. 9. Vol. 28. No. 45. pp. 1233-1241.

From a number of persons actually suffering or recently convalescent from cholera the predominant organisms present in the stools were isolated and examined, to ascertain whether they exerted any inhibition on the growth of cholera. In all 25 organisms were tested by growing them on agar plates for 2 days and then inoculating the same plates with cholera, but only *B. pyocyaneus* was found to have a definite antagonistic action. This property of *B. pyocyaneus* has been already noted by EIJKMANN, and is due to the production of a diffusible substance, which resists boiling and remains active after the medium has been neutralised—a point in which it differs from a thermostable inhibiting substance produced by *B. prodigious.* In peptone-water a similar body is developed but more slowly, and in young cultures it is not thermostable. Neither the presence of *B. pyocyaneus* nor its sterilised products are able to prevent the death of guinea-pigs injected with cholera intraperitoneally.

No appreciable difference was found in the virulence for guinea-pigs of cholera strains isolated from carriers and those isolated from actual cases. During a cholera epidemic Pane isolated from a water-supply a vibrio, which resembled the true cholera organism, and was haemolytic and pathogenic for guinea-pigs, but it did not produce the characteristic change in the suprarenals and was distinguishable from the vibrio of Koch by agglutination tests.

J. H. S.

LANDES (L.). **Etude de quelques Vibrions isolés au Cours des Poussées Epidémiques du Choléra, en 1911-1912, en Algérie.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 792-796.

Of 25 vibrios isolated from the stools of cholera patients (and examined several months after isolation), 17 gave the typical Pfeiffer phenomenon, and of these 17, 14 were agglutinated by specific serum in dilution of at least 1-1000, 2 in dilution of 1-500, and 1 in dilution of 1-100. Of 5 vibrios isolated from water, 1 was agglutinated in 1-1000, and gave the Pfeiffer phenomenon. Among the 15 strains that were highly agglutinable, 14 gave both the indol and nitrite reactions, while of the 15 less agglutinable strains only 5 gave these reactions. The other reactions studied (formation of a cloud in peptone-water, growth in gelatin-stab, growth on potato or milk) gave little assistance in differentiating true cholera from other vibrios, and the haemolytic power was pronounced in only three strains, all of them only little agglutinable.

J. H. S.

BAERTHLEIN. **Ueber choleraähnliche Vibrionen.**—*Centralbl. f. Bakt.* 1. Abt., Orig. 1912. Dec. 30. Vol. 67. No. 5. pp. 321-335.

The use of modern media, especially of DIEUDONNÉ's alkaline blood-agar, has shown that vibrios occur more frequently in faeces than was formerly supposed, particularly in cases of intestinal disturbance. Baerthlein has examined a number of these organisms, including one that was isolated in pure culture from the blood of a patient whose clinical condition had suggested food-poisoning. He would, however, limit the term "cholera-like" to vibrios which have only one flagellum and are culturally and morphologically indistinguishable from true cholera. He finds that there is another group which has more than one flagellum and culturally and serologically resembles the *B. faecalis alcaligenes*, and these he would keep apart. The true cholera-like vibrios can be distinguished from cholera by agglutination, but not so clearly by complement-fixation. They are usually pathogenic for guinea-pigs, and most of them are haemolytic.

J. H. S.

VAN LOGHEM (J. J.). **Ueber den Unterschied zwischen Cholera- und El Tor- Vibrionen. (ii. Mitteilung.)** [The Differences between Cholera and El Tor Vibrios.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Jan. 11. Vol. 67. No. 6. pp. 410-419.

According to the author haemolysis is always produced in fluid blood-media by El Tor strains, but never by genuine cholera strains isolated from undoubted cases of cholera during an epidemic. Both types of organisms, however, on blood-agar produce clear zones around the colonies and this is commonly attributed to haemolysis. Only the El Tor zone does in fact

contain oxyhaemoglobin, in the cholera zone there is no diffusion of oxyhaemoglobin and the clear zone is attributed by Van Loghem to a digestive action of the cholera vibrios on the blood cells without any true haemolysis. The peptic action which cholera exerts on gelatine is found to run parallel to this haemodigestive action, and probably the two are identical. El Tor vibrios possess a similar digestive action, but they have in addition a true haemolytic power, which cholera never has. Although, then, the serum reactions of the two kinds are so exactly alike that one cannot by these means distinguish between them, Van Loghem agrees with those authors who regard the El Tor vibrios as a quite distinct type from the true cholera organism.

J. H. S.

## Unclassed.

Chwilewizky (Mnoucha). **Ueber die Beschleunigung der Nitritproduktion in Kulturen von Choleravibrionen in Nitratbouillon durch deren vorhergehendes Wachstum auf verunreinigtem Boden.** [Acceleration of Nitrite-production of Cholera by previous Growth on Impure Soil.]—*Arch. f. Hygiene.* 1912. Vol. 76. No. 8. pp. 401-419.

Chwilewizky took selected samples of soil, packed them firmly into tubes in the manner introduced by Emmerich, and allowed a solution of sodium nitrate or in some instances of water to soak up from the foot by capillary force. In this process the rising fluid dissolves and carries with it all the soluble organic and inorganic substances it meets with, and as evaporation proceeds from the top, these become concentrated in the superficial layers. (A similar process is held to occur in nature during a dry season, but after heavy rain or in a wet season the current of water is reversed and no such concentration takes place). The tubes were then inoculated on the surface with cholera vibrios, and after a short interval, usually three days, subcultures were made into nitrate-bouillon, and the rate of nitrite production determined.

The soil used was taken from a place in a Munich suburb which was exposed to heavy faecal and other contamination, and fluid expressed from it proved a good culture medium for cholera. It was compared with clean soil from another part of the same district, as well as with other control cultures. The samples were taken in July and also in December of 1911, a year exceptionally dry and warm in Munich. In the result it was found that in all cases, whether the soil was used sterilised or unsterilised, and after imbibing water or nitrate solution, the organisms on the surface of the impure soil had a greatly increased capacity to produce nitrites, as compared with those on clean soil and on nitrate broth controls. To what extent this was due simply to greater growth of the organisms was not determined. On the other hand the organisms from the clean soil showed little or nothing of such an increase in reducing power; and on an old sample of impure soil collected during the wet year 1907, there was also no increased capacity, the vibrios in fact dying in the fluid expressed. Chwilewizky concludes that mere contamination

of soil with manure and similar material is not enough to produce conditions favourable to the growth of cholera, a long dry period being required to allow of the transference of suitable nutriment in adequate quantity to the surface-layers.

J. H. S.

GALEOTTI (G.). **Ueber das Nukleoproteid der Cholerabacillen.** [The Nucleo-Proteid of Cholera Bacilli.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1912. Dec. 11. Vol. 67. No. 4. pp. 225-229.

Galeotti points out that so early as 1896 he had isolated and described the chemical and immunising properties of a substance, which is the same as those prepared from cholera vibrios by quite recent workers who are apparently unaware of his work. This body, of which the method of preparation is given here, is a toxic nucleoproteid, which produces in animals symptoms very like those of clinical cholera in man, and has marked immunising properties. The nucleoproteid is specially toxic if prepared from highly virulent strains.

J. H. S.

ZAMMIT (Th.). **Vibrions Cholériques isolés de l'Eau de Mer.**—*Bull. Soc. Path. Exot.* 1913. Jan. Vol. 6. No. 1. pp. 9-10.

The author obtained from the salt-water of a bay, into which cholera-contaminated material was delivered, abundant cultures of a vibrio indistinguishable from cholera, and this in 4 samples on 2 occasions one week apart. Subsequent samples were found negative. Half the samples were taken from the quay, the rest from the water several metres out from the bank. The vibrios were found in one cc. of water. They were agglutinated up to a dilution of 1-1,000 by specific serum, but not higher; gave the Pfeiffer phenomenon, were of typical appearance, liquefied gelatine in characteristic manner, gave the typical supernatant cloud on fluid media and a creamy growth on potato, coagulated milk, produced indol and formed nitrites from nitrates. Haemolysis of sheep corpuscles was not obtained in 5 hours but began in 24 hours.

J. H. S.

CANO (U.) & MARTINEZ (G.). **Einfluss der Wasserfauna auf Cholera-vibrionen.** [Influence of Water-fauna on Cholera Vibrios.] —*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Jan. 11. Vol. 67. No. 6. pp. 431-433.

Cholera vibrios lived 2-4 days in the intestine of goldfish, but neither the presence of these fish nor of water-beetles nor the larvae of frogs or water insects affected in any way the viability of the vibrios in the water.

J. H. S.

Goéré (J.). **Le Choléra et la Fièvre Typhoide peuvent-ils être propagés par les Lézards?**—*Compt. Rend. Soc. Biol.* 1913. Jan. 17. Vol. 74. No. 2. pp. 91-92.

Four of the common green lizards found in the districts near Tunis received by the mouth 0·5 cc. of a 24 hour broth culture of cholera vibrios. All were affected by the dose. One died in 30 hours after acute diarrhoea, and the intestine contained huge numbers of the vibrios. A second had diarrhoea for 2 days, and, gradually wasting, died after a month. Its stools contained vibrios during the whole month, and after death the organisms were recovered easily from the intestine. Both the other lizards had diarrhoea for one day, the stools containing vibrios for 2 and 5 days respectively, and recovered.

Two lizards received similar doses of typhoid bacilli without result, and the bacilli were not recovered from the stools.

Goéré thinks that lizards may act as carriers of cholera, especially considering their numbers and their habit of frequenting refuse left in the fields.

J. H. S.

Thiroux (A.). **Le N'diank, Choléra du Sénégal; Son Agent Pathogène.**—*Bull. Soc. Path. Exot.* 1912. Nov. Vol. 5. No. 9. pp. 753-762.

An account of a disease, which resembles Asiatic cholera in many respects, and in which from two cases Thiroux isolated a vibrio. The same organism was also isolated from the water of the river, but it presents several points of difference from the vibrio of Koch. The relationship of the disease to true cholera, if any, is undetermined.

J. H. S.

Bertarelli (E.). **Perchè quest 'Anno non abbiamo avuto il Colera?** [Why have we had no Cholera this Year.]—*Gazz. d. Ospedali e d. Cliniche.* 1912. Nov. 5. Vol. 33. No. 133. pp. 1392-1394.

Some general observations on the fact that cholera did not reappear in Italy in 1912, although in 1911 everything seemed to point to an outbreak as inevitable. Bertarelli points out that it is easy to exaggerate the importance of carriers, and that we really know comparatively little of the epidemiology of the disease, *e.g.* the influence of environment on the vibrio, but he is inclined to attribute something to the prophylactic measures taken.

J. H. S.

# DYSENTERY.

## Amoebiasis and Amoebic Dysentery.

Menetrier (P.) & Brodin (P.). **Dysenterie Amibienne. Début un Mois après le Retour en France. Six Rechutes Successives. Abcès du Foie Multiples et Dégénérescence Amyloide. Examen Histologique des Lesions du Foie et de l'Intestin.**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1912. July 25. 3 ser. Vol. 28. No. 26. pp. 143-150.

This is an account of the case of a young man who served his term of military service in Saigon (Cochin-China) and showed no signs of dysentery during his sojourn there. It is suggested that he became infected on the way home in the troop-ship from invalids on board, because a month after his arrival in France he was seized with diarrhoea and other characteristic symptoms, for which he was several times treated in Paris hospitals. A remedy whose nature is not further specified, but which goes by the native name of Kho-Sam,* gave the greatest relief of anything tried, and on one occasion arrested all symptoms for several months. Eventually, as the sequel to an accident, the disease reappeared, and an abscess of the liver led to an operation, to which the patient succumbed about seven years after the first appearance of symptoms.

Post-mortem examination showed the liver to be greatly enlarged, with three subsidiary abscesses. Its structure showed marked lardaceous degeneration, evidenced by the iodine reaction; and the glomerular region of the kidneys also reacted to the same test, while the spleen did not. The large intestine was ulcerated from end to end.

A minute account of the histology of the parts affected is given, but does not present many features of novelty. The authors, however, like Kubo (see below) point out that the ulceration in these cases seems to be produced by necrosis in mass of the superficial layers of the mucous membrane, owing to the mechanical interference with nutrition produced by the infiltration of the submucosa with amoebae.

S. R. Douglas.

Galliard (M.) & Brumpt (M.). **Un Cas de Dysentérie Amibienne Autochtone.**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1912. Dec. 19. 3 ser. Vol. 28. No. 36. pp. 736-741.

An account of a case of amoebic dysentery occurring in a man aged 28, an inhabitant of Paris who had never left France.

The clinical picture, which is given in detail, is that of a typical case of amoebic dysentery of three and a half months' duration.

---

* According to H. Legrand (see below) Kho-Sam is the seed of *Brucea sumatrana*, one of the Simarubaceae.

The treatment employed consisted of enemata of collargol, a milk diet and doses of Kho-Sam. The patient remained in hospital about one month and was discharged as cured.

The authors especially note the rapid improvement after the administration of the Kho-Sam.

Examination of the blood and mucus contained in the stools revealed the presence of numerous typical amoebae.

Some of this mucus was injected into the rectum of a young cat and the stools were found to contain amoebae after an incubation period of three and a half days. Figures are given of various types of amoebae found both in the patient's and the cat's faeces.

Five other cases of amoebic dysentery occurring in France in patients who had never left Europe are referred to.

S. R. D.

Kubo (N.). **Die ätiologische Bedeutung der *Entamoeba histolytica* bei Amöbendysenterie nach anatomisch-histologischen Befunden.** [The Aetiological Significance of *Entamoeba histolytica* in Amoebic Dysentery from the Histological Standpoint.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1912. Nov. Vol. 16. No. 21. pp. 713-721.

The author considers the relationship of the entamoeba to this form of dysentery from an anatomical point of view, pointing out that the parasites are only to be found in the submucous layers of the intestinal wall. He suggests that as a consequence their part in causing ulceration can only be an indirect one.

From a case of dysentery which came under his notice, death occurring from intercurrent tubercular disease of the lungs, the author was able to obtain specimens of dysenteric nodules in the mucosa of the colon, which had not arrived at the stage of ulceration. Histological examination of such nodules revealed the characteristic infiltration of the submucosa with entamoebae, and as the patient had an amoebic abscess of the liver besides there could be no doubt as to the nature of the condition. But the amoebae were confined to this situation, while the mucous layer showed nothing more than cell-infiltration and diminished staining power. The author suggests that the necrosis of the superficial layers, which produces this characteristic form of ulceration, is brought about mainly by mechanical interference with nutrition, or by the action of toxic principles, and that a secondary infection with bacteria completes the process. Divergent views as to the relative parts played by bacteria and amoebae in this form of dysentery are thus to be reconciled.

An illustration is given of the microscopic condition present.

S. R. D.

Carini (A.). **Un Autre Cas de Phagédénisme Cutané Amibien.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 799-800.

After referring to a case of phagedenic ulceration of the skin, spreading from a wound made in opening an amoebic liver abscess, reported by him, the author describes the following case

in which the wound made for the evacuation of a liver abscess showed a similar process.

The patient, an Italian workman aged 30, had suffered from dysentery for ten months and when admitted into hospital was found to be suffering from a large abscess situated in the right lobe of the liver. The abscess was opened and more than a litre of pus was evacuated, but the fever and dysenteric symptoms persisted in spite of treatment. Twenty days after the operation the edges of the wound became gangrenous and rapidly ulcerated, so that at the end of a week the ulcerated surface measured 10 by 8 cm. and in some places extended down to the muscles. The patient died. Shortly after death a piece of the necrosed tissue was examined and found to contain amoebae similar to *E. tetragena*.

In the author's opinion such a complication is not very uncommon, especially in cachectic patients.

S. R. D.

MAXWELL (James L.). **Fistulous Diseases of the Buttocks: A Clinical Entity.**—*Trans. Soc. Trop. Med. & Hyg.* 1912. Dec. Vol. 6. No. 2. pp. 50-53.

This is a description of a disease—a rare one—met with in South Formosa and probably also in South China. The lesion apparently starts as an ordinary fistula-in-ano and from this fistulous tracks spread in all directions over both buttocks, till the whole area is outlined by a maze of tracks, communicating with each other, and marked on the surface by raised and indurated lines. Here and there small pinholes openings, which discharge a serous pus, are seen. Actual pain is slight though discomfort in sitting is often marked. Treatment is unsatisfactory. Slitting up and scraping the sinuses is only palliative, and excision of the whole of the affected tissues is impossible owing to the large areas involved. The condition is not due to tubercle or syphilis. In the pus from some of the cases Maxwell noted entamoebae and he suggests that these may prove to be the causative agents of the disease.

In the discussion which followed the reading of the paper CASTELLANI drew attention to the fact that KARTULIS had previously described a clinically similar affection in Egypt. From these cases a Saccharomyces-like organism was isolated. Since that time CASTELLANI has met with the same condition in Ceylon and has confirmed KARTULIS' findings. WENYON pointed out the difficulty of distinguishing between pathogenic and non-pathogenic amoebae and shewed that the mere finding of these organisms in discharges from the lesions was not sufficient proof of a connection between the two.

G. C. L.

ROSENBERGER (Randle C.) & TERREL (Truman C.). **Amebiasis and the Results of Tests for the Determination of Occult Blood in the Feces.**—*New York Med. Jl.* 1913. Jan. 11. Vol. 97. No. 2. pp. 62-64.

In this paper the authors give the results of the examination of the faeces of 200 lunatics for the presence of blood and amoebae.

The faeces of 137 males were examined and of these 112 showed amoebae; of 141 females 81 showed amoebae.

None of these cases had any diarrhoea or dysentery and all the amoebae found resembled the amoeba coli.

In testing the stools for the presence of blood three tests were used:—(1) The turpentine and guiac test. (2) Benzidine. (3) A modified Meyer's reagent.

This modified Meyer's reagent consisted of "a solution of phenolthalein in 15 to 17·5 per cent. potassium hydrate which is boiled in distilled water with chemically pure, powdered zinc (Merck's) until colorless."

Amongst the 141 females blood was recognised in the faeces in 42·5 per cent. of the cases when this Meyer's reagent was used, in 33·3 per cent. with the turpentine and guiac test and in 35·4 per cent. when the benzidine test was applied. The faeces of 122 males were also tested for blood with positive results in 66·2 per cent. when the Meyer's reagent was used and 45·2 per cent. in the case of the turpentine and guiac test.

In very few of these cases were haemorrhoids or any other lesion which might lead to bleeding from the intestines discovered. Many of the patients showed some anaemia.

S. R. D.

WENYON (C. M.). **Experimental Amoebic Dysentery and Liver-Abscess in Cats.**—*Jl. London School Trop. Med.* 1912. Dec. Vol. 2. Pt. 1. pp. 27-34.

After giving a concise account of the earlier experiments on the production of amoebic dysentery in animals, the author discusses the question whether *E. tetragena* is the same as *E. histolytica*. The conclusions arrived at from the study of the literature are that these two organisms are most probably identical, that the life-history of *E. histolytica* as described by SCHAUDINN is erroneous, and that VIERECK really described the true life-history of this species and renamed it *E. tetragena* (cf. DARLING, see below). The author's own observations confirm this view as he has consistently failed to trace the life history of the pathogenic amoebae as described by SCHAUDINN, especially as regards the production of small, infective, tough capsuled spores, but when resting forms were discovered [and this appears to be only in a small percentage of the cases and generally when the patient is recovering naturally from the disease] they were always of the type described by VIERECK, namely, transparent cysts with four nuclei.

The author next discusses the production of amoebic dysentery in cats.

The material used in these experiments was obtained from the case of a European from Bombay; the blood-stained mucus found in his stools contained a large number of both amoebae and cysts, which cysts correspond typically with those described by VIERECK.

By means of a catheter about 5 cc. of this material was injected into the stomach and into the rectum of two cats which, after a

period of nineteen days, were found to be passing typical dysenteric stools containing much blood and mucus and many amoebae.

From these cats others were infected and the infection was carried on through four passages without any sign of decreasing virulence. In order to ensure success in such experiments the author recommends the use of kittens soon after they have become independent of their mother.

Further observation on these dysenteric cats showed that frequently the mesenteric glands, draining the ulcerated areas of intestine, were swollen and contained large numbers of amoebae, which were apparently feeding on the gland tissue.

In one cat which died from dysentery liver abscesses were found; these were four in number, small and superficial, and contained large number of amoebae.

Discussing the question as to how the amoebae penetrate into the tissues the author gives as his opinion that some toxin must be excreted from the amoebae which brings about the degeneration of the epithelial cells and allows the parasites to pass into the connective tissue.

Experiments carried out to ascertain if *E. coli* could cause symptoms of dysentery were uniformly unsuccessful, although enormous numbers of these amoebae were injected both into the stomach and rectum of the cats.

The amoebae found in cats suffering from dysentery were similar to those found in man, the only point noticed being that degeneration forms were more numerous in the cats than in man; no encysted forms were seen, but in none of the cats did the dysentery pass beyond the acute stage.

The paper concludes with a detailed account of the experiments on the various cats.

S. R. D.

ROGERS (Leonard). i. **Sixty Cases of Amoebic Dysentery illustrating the Treatment by Ipecacuanha and Emetine respectively.** —*Indian Med. Gaz.* 1912. Nov. Vol. 47. No. 11. pp. 421-427.

ii. **The Rapid and Radical Cure of Amebic Dysentery and Hepatitis by the Hypodermic Injection of Soluble Salts of Emetine.**—*Therapeutic Gaz.* 1912. Dec. 15. Whole Series, Vol. 36. (3rd Series, Vol. 28.) No. 12. pp. 837-842.

iii. **Emetine Salts in the Treatment of Dysentery.** [Correspondence.]—*Lancet.* 1913. Jan. 11. p. 129.

i. A further contribution on the author's application to the treatment of amoebic dysentery of VEDDER's scientific investigations into the amoebicidal action of ipecacuanha and its constituents.

The only point not already noted in previous abstracts given in this *Bulletin* is that the author in one very severe case of dysentery administered emetine by intravenous injection, in addition to the doses usually given hypodermically. The doses given intravenously were one half gr. and two-thirds gr. on the first day of treatment and one gr. the next day; the salt of emetine

used was the hydrochloride and in each case it was dissolved in five cc. of sterile normal saline. With these doses no symptoms of depression were noticed.

ii. This paper consists of a recapitulation of communications, published by the author in various periodicals, on the curative effect of hypodermic injections of soluble salts of emetine in case of amoebic dysentery. These papers have been fully abstracted in this *Bulletin.* No new facts are recorded.

iii. An answer to Lt.-Col. TULL WALSH's letter in which Rogers states that he considers the essential of the treatment of amoebic dysentery recommended by him is the subcutaneous injection of the soluble salts of emetine.

S. R. D.

SIMON (Sidney K.). **A Further Word on the Ipecac Treatment of Amebic Dysentery.**—*New Orleans Med. & Surg. Jl.* 1912. Nov. Vol. 65. No. 5. pp. 373-377.

The author investigated the after history of a number of cases of dysentery which had been treated with ipecacuanha; he was able to trace 15 out of 35 cases and in none of these had there been any recurrence of the dysentery; the shortest period since the treatment had been carried out was six months.

The treatment employed consisted of:—Rest in bed for at least two weeks. Restricted diet gradually increased, milk being used sparingly or avoided. The ipecacuanha was given in the form of salol-coated pills, the doses being from 60 to 100 grains. Washing out the large intestine was, in the author's opinion, useless.

S. R. D.

BECK (Harvey G.). **Duodenal Medication of Ipecac in the Treatment of Amebic Dysentery.**—*Jl. Amer. Med. Assoc.* 1912. Dec. 14. Vol. 59. No. 24. pp. 2110-2114.

After a long review of the various methods used by different authorities for the alleviation of the disagreeable symptoms appearing after the administration of large doses of ipecacuanha the author recommends that the drug should be introduced directly into the duodenum with an Einhorn's tube.

The details of seven cases of dysentery treated by this method are given.

S. R. D.

COHENDY (Michael). **Essai de Traitement de la Dysenterie Amibienne par les Lavements au Sucre.**—*Bull. Soc. Path. Exot.* 1912. Dec. Vol. 5. No. 10. pp. 846-850.

After experimenting with various antiseptics, such as boric acid, potassium permanganate, silver nitrate, and copper sulphate, the author found that in strengths commonly used in enemata these substances were without action on pathogenic amoebae *in vitro.* Distilled water however quickly immobilised the amoebae and caused them to assume a spherical form. He therefore sought for some inoffensive substance which when dissolved in the

distilled water would not alter its hypotonic characters which be believed produced a deleterious effect on the amoebae.

The substance selected was cane sugar and enemata were made by mixing 250 cc. of syrup, made according to the direction given in the French Pharmacopaeia, with three quarters of a litre of boiled water.

Directions are given as to the frequency of administration of such enemata, diet, etc., and the paper ends with an account of seven cases, some of which appear to have benefitted from the treatment.

S. R. D.

DEEKS (W. E.). **Treatment of Dysentery due to Infection with** *Entamoeba histolytica.—Jl. Amer. Med. Assoc.* 1913. Jan. 4. Vol. 60. No. 1. pp. 38-42.

The author's conclusions are that amoebicidal irrigations are useless and that the most successful treatment is a milk diet combined with the administration of massive doses of bismuth subnitrate, 180 grains being given every three hours.

S. R. D.

LEGRAND (Hermann). **Les Abcès Dysentériques du Cerveau (Amibiase Encéphalique).**—*Presse Médicale d'Egypte.* 1912. Oct. 15. Vol. 4. No. 20. pp. 309-315; and Nov. 15. No. 22. pp. 341-343.

The author gives an exhaustive account of a complication of amoebic dysentery, which is hardly mentioned in text-books, namely, abscess of the brain. This is almost exclusively an accompaniment of abscess of the liver, though the symptoms due to it may not appear till the liver lesion has become obsolescent, or has been cured. KARTULIS and JACOB put the proportion at three per cent. of cases of liver abscess, but Legrand thinks this ratio much too high.

The abscess is usually single and may vary in size from a walnut to an apple. It occurs most frequently in one of the hemispheres and may rupture into the ventricles and cause acute symptoms. One case of occurrence in the cerebellum has been noted. Meningitis is not often an adjunct, and therefore symptoms due to it are not usually to be observed. The pus resembles that of liver abscess in being viscid, grumous or tinged with blood (crushed strawberry colour), and in operating it is desirable to probe the brain with a trocar instead of an aspirator needle or knife. The amoebae are only to be found adhering to the wall of the abscess, and therefore lumbar puncture is not helpful in diagnosis; in some of the more recently reported cases they have been found in the pus and in sections from the wall of the abscess cavity.

The clinical symptoms do not differ materially from those of other chronic brain tumours.

It is suggested that infection arises through the amoebae getting through the barrier of the portal system, and thus causing thrombosis.

The author has collected particulars of 45 cases. They are analysed as follows:—

*Geographical distribution.*—

1 case has been reported from Madagascar.
1 ,, ,, ,, ,, ,, the Gulf of Mexico.
5 cases have ,, ,, ,, British India.
7 ,, ,, ,, ,, ,, the French Colonies of Indo China.
26 ,, ,, ,, ,, ,, Egypt.
2 ,, no information is given of the locality.
5 ,, have occurred in persons who have never lived out of Europe, *viz.* 2 in France, 1 in Germany, and 2 in England.

*Age.*—With four exceptions the patients were between twenty and forty years of age, the exceptions being two cases above forty, namely 45 and 57 and two cases below twenty, a girl of five and a boy of fourteen.

*Sex.*—As in cases of liver abscess, this complication of dysentery is much more common in males than in females; only three cases have been reported amongst the latter and one of these was that of the girl of five mentioned above.

*Occupation.*—Fifteen cases were in men connected with the army and many of the patients had a history of alcoholism.

*Race.*—Europeans were most frequently affected but amongst the cases reported from Egypt there were a few Arabs and Copts.

*Situation of the abscess.*—

12 occurred in the left cerebral hemisphere;
10 occurred in the right cerebral hemisphere;
6 were multiple and sometimes bilateral;
6 had opened into the ventricles;
1 was in the left lobe of the cerebellum;
in 10 the situation of the abscess was not reported.

A detailed account of the morbid anatomy and histology is given.

S. R. D.

Fink (Lawrence G.). **Liver Abscess Treated by a Modification of the Leonard Rogers' Method.**—*Jl. Trop. Med. & Hyg.* 1912. Nov. 15. Vol. 15. No. 22. pp. 339-340.

A case of liver abscess in which the author used a trocar and canula to evacuate the abscess cavity and washed it out with salt solution through the canula, finally injecting four ounces of bichloride of quinine solution (ten grains to the ounce). This procedure had to be repeated in 13, 22, and 31 days, after which no further collection of pus took place. Pulv. ipecacuanha was given in thirty grain doses twice daily at first, later in smaller doses.

The author reports this case to show that, in the absence of an aspirator, a trocar and canula can be used to evacuate such an abscess.

S. R. D.

DARLING (S. T.). **Observations on the Cysts of *Entamoeba tetragena*.**—*Arch. Internal Med.* 1913. Jan. 15. Vol. 11. No. 1. pp. 1-14. With 2 plates.

After recounting many of the pathogenic human parasites, protozoal and metazoal, occurring in the cosmopolitan population of the Panama Canal Zone, Darling discusses the cases of amoebic dysentery that have come under his notice during the last seven years in Panama. He concludes that *Entamoeba tetragena* only occurs, and regarding *E. histolytica* he states that he is "inclined to doubt whether it has ever existed anywhere." He quotes HARTMANN as believing that SCHAUDINN was misled by degeneration forms in describing *E. histolytica*. He writes, "Schaudinn studied the peculiar forms from which he described *E. histolytica* in but one single case of entamoebic dysentery [in a Chinese], and his interpretations have been accepted and applied to many cases elsewhere by several observers." He considers that CRAIG's technique was at fault.

"The individual with acute symptoms of dysentery is not usually infectious, for he is merely harbouring the large vegetative form [trophozoite], which, to judge from the results of animal experiments, is digested and cannot serve to infect. It is the unsuspected individual who has recovered from an attack and who may have formed stools or possibly diarrhoea, whose stools contain cysts, that is the carrier of infection. The importance, therefore, of examining stools of recovered patients, and in fact all clinical cases as well as of persons in contact with clinical cases of dysentery, for the detection of carriers, is very great."

"The commonest location for entamoebic lesions" was "the caecum." "Cases of this type may give no evidence of infection other than colicky pains in that region, but they are undoubtedly fertile carriers of cysts. The stools of cyst-carriers are usually solid and contain no dysenteric elements—one of the reasons why tetragena cysts have been so long overlooked or misinterpreted."

The cysts are rounded, refractile bodies about 15$\mu$ in diameter. "When the cysts are quite homogeneous in the fresh stool, they will after exposure to the moist chamber or in vaselined films become differentiated in a day or two so that one, two or four nuclei may be seen."

"It would appear that when most cases of entamoebic dysentery are treated energetically by bismuth subnitrate, the vegetative or large pathogenic generation is at once removed, leaving none to propagate the small generation from which the cysts arise."

Darling considers that *E. minuta*, Elmassian, is "the small generation and cysts of *E. tetragena*."

In young cats fed on material from the stools of one of the cases, Darling states that the "alleged differences between *E. tetragena* and *E. histolytica* and *E. nipponensis* [*? nipponica*], are due to unusual physiological or pathological distributions of basichromatin within the nucleus of *E. tetragena*."

Darling doubts the occurrence of autogamy in cyst formation. Full details of three cases are given.

The memoir is illustrated by two plates which show trophozoites, schizonts and cysts of various ages.

The author's own conclusions with regard to his very interesting and important researches are as follows:—

"These cases illustrate the cyst production of *E. tetragena*, its intermittency, the absence of cysts during acute symptoms and their presence in formed stools long after the subsidence of acute symptoms.

"The gradual disappearance of cysts in moist chamber preparations with a concomitant loss of infectiousness of the stool, and the loss of infectiousness by drying for seven weeks are shown. The development of amebulas within the cysts and their emergence and fate in the faecal mass is described.

"It would appear that infection in man is the result of the contamination of food with a small amount of faecal matter containing a great many cysts, during the first day or two after passing.

"In one experiment, kittens were fed with a pure culture of tetragena cysts forty-eight hours old. This caused lesions in the small bowel in which large trophozoites were found with the nuclear characters of *E. tetragena*, *E. histolytica* and *E. nipponensis*. This not only favours the opinion held of the identity of *E. histolytica* and *E. nipponensis* with *E. tetragena*, but it shows that specific identification of *histolytica* and *nipponensis* cannot be made from the large vegetative trophozoites alone, but the essential features of the life-cycle must be seen.

"The very great importance of examining the stools of all convalescent and recovered cases of entamoebic dysentery for cysts, and thus detecting 'carriers' is made apparent, for it is the cyst that is the infecting agent and not the large trophozoite."

H. B. Fantham.

Craig (Charles F.). **The Relation of Parasitic Amoebae to Disease.** —*Amer. Jl. of Med. Sci.* 1913. Jan. Vol. 145. No. 1. pp. 83-100.

This paper is a reprint of one read at the 15th International Congress of Hygiene and Demography at Washington in September last. In it the author sets forth his views and summarises his researches on Entamoebae in the human digestive tract. Craig's views have been frequently stated during the last few years in numerous books and papers, and one of the latter was reviewed recently in this *Bulletin* (No. 4, pp. 179-180), to which those interested should refer.

It should be noted that Craig is a firm believer in the existence and entity of *E. histolytica*. He himself in 1905 confirmed Schaudinn's researches and he also records that Prowazek recently found the "species in dysentery cases in Samoa." Craig discusses (1) The relation of Entamoebae to disease and the relations of (2) *E. coli* (3) *E. histolytica* and (4) *E. tetragena* to disease. Craig summarises the differences between these three species thus:

"The nuclear structure of each species is distinctive, while *Entamoeba coli* forms cysts containing eight daughter nuclei, this number being sometimes exceeded: *Entamoeba tetragena*, cysts containing four daughter nuclei; and *Entamoeba histolytica*, cyst-like bodies, which are budded from the parent organism. In all these species the differences in the method of reproduction have been carefully studied, and, in my opinion, constitute the most important basis of specific differentiation."

The author's conclusions are as follows:—

"(1) *Entamoeba coli* is a harmless commensal in the human intestine.

"(2) *Entamoeba histolytica* and *Entamoeba tetragena* are pathogenic species capable of producing in man the disease known as amoebic dysentery.

"(3) *Entamoeba coli, Entamoeba histolytica* and *Entamoeba tetragena* are strictly parasitic species and have not been cultivated.

"(4) There is not sufficient evidence at present to prove that any of the amoebae that have been cultivated are pathogenic to man. All cultivated species belong to the genus *Amoeba*, and differ greatly in morphology and life-cycle from the parasitic amoebae, which belong to the genus *Entamoeba*."

H. B. F.

PENARD (Eugène). **Nouvelles Recherches sur les Amibes du Groupe Terricola.**—*Arch. f. Protistenkunde.* 1912. Dec. 14. Vol. 28. No. 1. pp. 78-140. With 59 text-figures.

The author gives a brief historical résumé of the work on the Amoebae found in moss, which organisms are capable of resisting desiccation by means of their "pellicle." He then describes *Amoeba terricola* (Greeff, 1866) an Amoeba possessing an unstainable, very fine, supple and pliant "pellicle," a large contractile vacuole and ellipsoidal vesicular nucleus. It rarely reaches 250$\mu$; when sub-spherical it is usually 90-100$\mu$.

*Amoeba similis* (Greeff, 1891)—Penard believes that he found an organism which may be *A similis*, but it closely approaches *A. terricola*.

*A. papyracea* (Penard, 1905) measures 160-190$\mu$ and when extended may reach 300 to 350$\mu$. It varies much in appearance and structure and the author desires to abolish the name *A. papyracea* in favour of *A. terricola*; also to abolish the species *A. similis*.

*A. fibrillosa* (Greeff, 1891). This amoeba contains many nuclei, many contractile vacuoles, and has a remarkable circulation of its cytoplasm.

*A. alba* (Greeff, 1891) is multinucleate; often 100 nuclei are present.

*A. sphaeronucleolus* (Greeff, 1891) is a small form.

The second part of the paper deals with various functions of the Amoebae. The author shows that in these Amoebae there is no conjugation, division, encystment or sporulation. The movements, digestive processes and excretion are well described. A full and useful account of the various parasites of the Amoebae, mostly fungi, concludes the memoir.

[Although the paper deals only with terrestrial amoebae, yet it is not without interest to the tropical investigator who may be engaged on the difficult subject of amoebic dysentery, especially if he is searching various food-plants for possible stages of Entamoebae. Terrestrial amoebae must not be confused with Entamoebae.]

H. B. F.

## Bacillary Dysentery.

Butler (Chas. A.). **Some Laboratory Notes upon the Bacillus of Dysentery.**—*Bull. Manila Med. Soc.* 1912. Nov. Vol. 4. No. 11. pp. 180-191.

This paper is divided into three parts. The first refers to some experiments carried out in reference to the production of indol by various microbes; the second describes a method of preserving human or animal agglutinating sera which are used in the diagnosis of the various types of dysentery bacilli; the third gives the characteristics of an organism isolated from the water of an artesian well, which resembled in some respects *B. coli.*

With regard to the first subject, namely, the production of indol by bacteria, the author points out that the test is a rough one and that too much stress should not be laid on a slight positive reaction. Investigating the methods of preparing media for this test he comes to the conclusion that the medium recommended by Theobald Smith, which has been rendered sugar free by planting into it *B. coli* and allowing growth to take place for about twelve hours, is a good one. Further investigations showed that the use of pure sodium chloride in media gave slightly fewer positive results than when kitchen salt was used.

The preservation of sera for carrying out the agglutination test is then described. The principle of this method consists of soaking strips of filter paper in the serum, drying in a current of air and preserving the dried paper in glass stoppered vessels containing calcium chloride.

The author gives full details as to the carrying out of this technique and discusses at length the merits of high and low potency sera; the conclusions arrived at being that a serum which agglutinates in a dilution of 1 in 100 with an hour's time limit is as useful as a higher potency serum when due care is taken in controlling the agglutination tests.

Serum of such potency can often be obtained from patients who have recovered from bacillary dysentery and the author frequently used such a source to obtain supplies of serum.

The last part of the paper deals with the description of an organism resembling *B. coli* isolated from the water of an artesian well, very favourably situated as regards sewage contamination; the well was cased and 486 feet deep. The characters of the organism were as follows:—*Agar,* whitish grey colonies with no great tendency to spread and less heaped up than *B. coli. Potato,* abundant growth turning brown after a couple of days. Nitrates were reduced to nitrites but no indol was produced in peptone solutions. *Broth cultures,* even turbidity and the organism showed very active motility. *Litmus milk,* acid and clot in 24 hours. *Morphology, staining, etc.*—Gram negative and rather shorter and narrower than typical *B. coli.* Voges and Proskauer's reaction positive. *Sugar fermentations,*—with glucose, lactose, maltose, mannite, saccharose, raffinose and dextrin, acid and gas were produced. With inulin there was no reaction.

S. R. D.

## Mixed and Unclassed.

Wells (R. T.). **Dysentery in Hazaribagh Central Jail, January 1910—March 1911.** Being the Report of an Enquiry carried out by Capt. R. T. Wells, M.A., M.B., I.M.S., under the direction of the Director, Central Research Institute, Kasauli. —*Scientific Memoirs by Officers of Med. & Sanit. Departs. of the Govt. of India.* (New Series.) No. 52. 44 pp. With 3 plates. 1912. Calcutta: Superintendent Government Printing, India.

The report commences with a classification of the cases included in the returns as dysentery. This classification is as follows:—

| | | |
|---|---|---|
| i. Specific ... ... | a. Bacillary. | |
| | b. Amoebic. | |
| ii. Non-Specific ... | a. Tubercular. | |
| | b. Malarial. | |
| | c. Due to Leishmania infection. | |
| | d. Verminous. | |
| iii. ... ... ... | Dysentery of uncertain origin. | |

The dysentery showed a marked seasonal prevalence, the maximum incidence occurring during the months having the greatest rainfall; 3 charts are given.

In all, 268 cases of dysentery were investigated. Of these 4·9 per cent. were proved by the isolation of a bacillus belonging to the dysentery group to be "bacillary" and in 19·5 per cent. motile amoebae were found microscopically. Five cases showed typical tubercular ulceration of the intestines on post-mortem examination. By examination of the faeces it was found that intestinal parasites were of very frequent occurrence amongst the prisoners. A table is given showing the result of these examinations. The occupation of the prisoners seemed to have no relation to the liability to attacks of dysentery.

The results of a large series of blood counts (59) are given in several tables; the author's conclusion is that even in uncomplicated cases of dysentery a high and sustained leucocytosis may occur.

The agglutinating power of the serums of the patients suffering from the bacillary form of the disease was investigated, not only in the case of the organism isolated from the patient in question, but also in the case of the bacillus of Shiga and of Flexner. These results also are tabulated, the conclusion drawn being that, as none of the organisms were agglutinated by high dilutions of the sera, the agglutination reaction as an aid to diagnoses of bacillary dysentery is of little use. A large number of control sera from cases from which no dysentery bacilli could be isolated showed quite as marked agglutination with B. Shiga and B. Flexner. The reactions of the various (14) bacilli of the dysentery group isolated is shown in tabular form. Nine of these bacteria were found to be mannite fermenters, the remaining five having no action on this sugar; but within these two groups there were minor differences.

In the investigation of the cases of amoebic dysentery it was found that amoebae could be cultivated not only from the stools of nearly every case in which they had been observed by microscopical examination, but also from the stools of healthy men and the jail water. Further it was found that Petri dishes containing Musgrave's media left open to the air, sometimes for as short a time as thirty minutes, in many cases (14 out of 36) gave colonies of amoebae associated with moulds or air-borne bacteria. These air and water-borne amoebae were similar to those cultivated from the faeces of dysenteric cases, but throughout their life history showed marked morphological differences from those seen in microscopical specimens made from such faeces.

Two types of amoebae were cultivated and by means of ingenious technique the whole of their life history was worked out, each stage being observed under the microscope and fully described. The author next gives a detailed account of the amoebae found in the faeces of patients suffering from dysentery and points out that the best and most certain way of recognising a cell as an amoeba is to observe movements of its protoplasm.

These amoebae were generally from 25-30$\mu$ in diameter, never over 40$\mu$; small forms also were seen 3-4$\mu$ in diameter. There was marked differentiation between the endo- and ectoplasm; the nucleus could be seen faintly and was situated eccentrically in the endoplasm. Red blood cells, bacteria, and other particles were often seen inside the amoebae. Cysts of this type of amoebae could not be recognised nor were any division forms seen. Motility was lost in from one to four hours under the most favourable conditions and when they were planted on Musgrave's media, although visible even after five days, no cysts or division forms were ever observed.

Other conclusions arrived at by the author are:—

That pathogenic amoebae are excreted very intermittently and therefore several negative results do not exclude the existence of such infection.

That the air-borne amoebae may very easily gain access to specimens of faeces or pus.

That there remained a large number of cases with dysenteric symptoms in which no definite causal factor could be recognised.

S. R. D.

CASTELLANI (Aldo). **Cases of Pseudo-Sprue probably due to a Flexner-like Bacillus.**—*Jl. Trop. Med. & Hyg.* 1912. Nov. 15. Vol. 15. No. 22. pp. 337-338.

An account of three cases all of which had the clinical symptoms of true sprue—smooth glazed tongue, frothy abundant stools of whitish colour, etc. In none could any history of dysentery be obtained. From the stools of each of these cases a bacillus having the character of *B. dysenteriae* Flexner was isolated. These organisms gave reactions practically identical with the typical Flexner bacillus, the only differences in a large series of biochemical reactions being the production of a small amount of

acidity in glycerin broth, and in the case of litmus milk of persistent acidity instead of alkalinity after a primary production of acid.

The patients' serums agglutinated the organisms isolated from their faeces in the first case in dilutions of 1 in 200 and 1 in 300, in the second and third case in dilutions of 1 in 100.

The author's opinion is that these cases were not true sprue, as the first two recovered completely without leaving Colombo, such recovery being practically unknown in true sprue. Most probably the symptoms were produced by the Flexner-like bacillus.

The second case was treated with a vaccine prepared from the bacillus isolated from the faeces, with seemingly good results.

S. R. D.

GAUDUCHEAU (A.). **Recherches sur la Dysenterie (3e Note).**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1912. Nov. Vol. 3. No. 9. pp. 569-573.

In this note the author records his observations on the vitality of *Bacillus dysenteriae* in symbiosis with amoebae and his attempts at immunization by injecting a culture of *B. coli* into the rectum.

The author's conclusions are as follows:—

(*a*) The bacillus of dysentery remains living for a long time in certain symbiotic conditions with amoebae. This association can be compared with that of an animal and a plant. The two (bacillus and amoeba) act upon food material, bringing about a complete cyclic metabolism capable of sustaining an existence which, though persistent, is extremely feeble and sluggish at any moment.

(*b*) The dysentery bacillus inoculated under the skin of a rabbit produced local reactions, generally attenuated, when the animal had previously been treated with a rectal injection of a culture of *Bacillus coli.*

H. B. F.

JONES (Henry A.). **The Treatment of Dysentery Cases in State Institutions.**—*Jl. Amer. Med. Assoc.* 1913. Jan. 4. Vol. 60. No. 1. p. 9.

The author recommends the following treatment which he has found very successful in the treatment of cases of dysentery occurring in certain prisons and lunatic asylums. No information is given of the causes of this dysentery.

As soon as the case is diagnosed 1 gr. of calomel is given, followed by ʒ i of the following mixture every two hours:—

Acid. Sulph. dil. ʒ iii
Tinct. Cardamom Co. ℥ i
Aquam ad ℥ viii

In addition to this one tablespoonful of olive oil is given every two hours and all food is withheld.

A small quantity of brandy is given if necessary.

S. R. D.

MORESTEN (H.). **Abcès du Foie Consécutif à une Dysenterie Autochtone.**—*Bulls. et Méms. Soc. de Chirurg. de Paris.* 1913. Jan. 28. Vol. 39. No. 3. pp. 144-147.

The detailed account of a case of dysentery complicated by liver abscess in a man who had never left France. The patient, aged 36, lived in Paris, which city he had only left to perform his military service.

His dysentery had been present five months before he was admitted to hospital, when he was found to be suffering from an abscess of the liver which on being opened healed rapidly. No examinations of the stools or pus were made to ascertain if amoebae were present.

S. R. D.

SMITHIES (Franz). **The Occurrence of *Trichomonas hominis* in Gastric Contents, with a Report of Two Cases.**—*Amer. Jl. of Med. Sci.* 1912. July. Vol. 144. No. 1. (No. 484.) pp. 82-94.

Smithies, gastro-enterologist to the Mayo Clinic, Rochester, U.S.A., reports two cases of women, inhabitants of the Southern States, who came under notice for severe symptoms of a dyspeptic nature. The examination of the residue of a test-meal showed, in each instance, the presence in the gastric contents of numerous flagellate protozoa which were identified as *Trichomonas hominis.* After the comparative failure of other methods of treatment, these organisms disappeared, in each case, upon the administration of a single dose of 50 to 60 grains of thymol, given at bedtime, along with 2 grains of calomel and followed by an ounce of Carlsbad salts in the morning.

Both patients had been in the habit of drinking unfiltered surface water in the localities in which they lived.

S. R. D.

## MYIASIS.

Pirajá da Silva (M.). **Nouveaux Cas de Myase dus à *Chrysomyia macellaria* Fabricius, à Bahia.**—*Arch. de Parasitologie.* 1912. Aug. Vol. 15. No. 3. pp. 425-430. With 2 figs. and 1 plate.

The author insists on the gravity of this disease. It can cause death within a few days. It causes great suffering to the patient with irreparable destruction of tissue and organs. The author's observations were made in August and September, and it is probable that the beginning of the hot weather is favourable to the development of the larvae of *Chrysomyia macellaria.* The infection is rather common in Bahia in persons who sleep in the open and in the sores of uncleanly individuals. Details are given of six cases. The lesions and sites of infection were: ulcer on the leg, one; abscess occipital region, one; ulcer in parietal region, one; and in three cases the larvae were in one or both nares. One of these latter proved fatal. There was haemorrhage and much very foul pus from nose and mouth. Dysphagia was marked and prevented any food being taken. The author thinks this symptom might have been caused by the presence of larvae in the pharynx or oesophagus. Unfortunately no autopsy was obtained. The cases were treated with injections of creoline solution, and, when this failed, with injections of pure benzine which always succeeded in producing expulsion of the larvae. In all the breeding out experiments the author obtained *Chrysomyia macellaria.* This fly attacks cattle also, especially young calves. Eggs are laid in the mouth or on the small sore sometimes left after detachment of the umbilical cord; wounds, *e.g.* from castration, and sores of any sort in cattle may harbour larvae.

Freire has found larvae in decomposing corpses. The bodies of small marsupials (called saruê) were left exposed in the open. They were found infected with larvae, which were bred out to the adult stage. Amongst these were species of *Sarcophaga* and *Lucilia*, especially *Lucilia eximia* Wiedmann, but some developed into *Chrysomyia macellaria.*

H. M. Hanschell.

Pieter (H.). **Un Cas de Myase Vulvo-Vaginale.**—*Rev. de Méd. et d'Hyg. Trop.* 1912. Vol. 9. No. 3. pp. 176-177.

The patient was a beggar woman 70 years old, native of St. Domingo, who scantily clothed, had slept out of doors. She was in great agony when first seen. The vulva was atrophied with prolapse of the vaginal mucous membrane, which was covered with foul smelling sticky pus in which actively moving larvae were seen. The vagina was excoriated and in places deeply ulcerated. The cervix was intact. There was no fever. Anaemia was marked and probably of intestinal origin. The larvae were recognised as those of *Chrysomya macellaria* (Fabricius, 1794). Antiseptic lotion injected three or four times a day rid the patient of the larvae in three days. The pus contained

the usual flora of the vagina and a gram-positive diplococcus. The author believes that the screw worm can produce vagino-vesical and vagino-rectal fistulae; invade the uterus; perforate the vaginal walls and reaching the peritoneal cavity infect it with micro-organisms.

H. M. H.

CARTER (Henry F.) & BLACKLOCK (B.). **External Myiasis in a Monkey.** [Memoranda.]—*Brit. Med. Jl.* 1913. Jan. 11. p. 72.

Two small groups of dipterous larvae were noticed on a specimen of *Cercopithecus callitrichus* which died from acute tuberculosis the day following the observation and removal of the parasites. One batch of these larvae were taken from the nose and region of the face surrounding the mouth, the other from the right side of the body near the groin. In both cases the larvae were in various stages of development. Twenty of these parasites were removed from the host, and placed in petri dishes containing raw flesh and sand.

Sixteen specimens were of the typical *Muscid* type and the remainder larvae of *Fannia canicularis*. The majority of the larvae pupated in four days, but four specimens remained in the larval stage for eleven to thirteen days. These four specimens were separated, and subsequently three specimens of *Calliphora erythrocephala* emerged, the remaining example having shrivelled up. From the remaining puparia seven specimens of *Muscina stabulans* (identified by E. E. AUSTEN) were obtained.

Neither *Fannia canicularis* nor *Muscina stabulans* can be classed among the "flesh flies," although both have been known to occur in the alimentary tract of human beings. The natural breeding places of *Fannia* are human excrement and decaying vegetable matter, but it has been reared from the larvae of *Epischnia canella* and has been found in the nest of *Bombus*. It is possible that the larvae in question were derived from an external source, *e.g.*, the food at the bottom of the cage. However they were found on the animal itself. The monkey had been taken a considerable distance from the cage before the larvae were removed. The larvae of *Muscina stabulans* also feed on decaying vegetable substances and dung; they sometimes attack growing plants, in these cases having probably been introduced with manure. The fly has been reared from human excrement and pupae of certain insects, *e.g.*, the gipsy moth; the pupae attacked were perhaps not healthy.

H. M. H.

## Miscellaneous.

Angeny (G. L.). **Gangosa.**—*New Orleans Med. & Surg. Jl.* 1912. Aug. Vol. 65. No. 2. pp. 113-120. With 3 plates.

The author has investigated the above disease in Guam, a small Pacific Island of the Marianne group, where it is very common. The term "gangosa" is derived from the Spanish word "*gangoser*" meaning "to snuffle." The disease was first studied by a Spanish Commission in 1828. Little was added to these investigations until the American occupation of the Island in 1898; since when researches have been carried out by many American observers: Leys, who suggested the term "Rhinopharyngitis mutilans," Mink, MacLean, Musgrave and Marshall, Stitt, etc. The disease begins as a small indolent ulcer, often with undermined margins, on the mucous membrane of the nose, soft palate or posterior pharyngeal wall. The ulcerative process gradually spreads destroying the soft tissues, cartilage and bones; the entire nasal structure may be destroyed and in very advanced cases the entire front of the face is replaced by a large opening, ringed about by numerous foul ulcers.

The disease may attack skin surfaces, especially of uncovered regions. Its duration varies from a few months to several years. The lesions after reaching a certain stage have a tendency to slowly heal, leaving thick disfiguring scars.

*Etiology.*—No specific organism has yet been found. Diligent search has been made for spirochaetes but without success.

There are three theories as to the etiology of the disease:—1, that it is a distinct entity; 2, that it is tertiary yaws; 3, that it is either tertiary or hereditary syphilis.

The opinion that gangosa is a distinct entity has been reached more by process of exclusion than by any other line of reasoning. It is now accepted by most authorities. The disease is probably not a late manifestation of yaws. It is true that yaws exists in Guam, but it is also extremely common in other tropical countries where gangosa is absent. Again it is not of syphilitic origin, syphilis being unknown among the natives of Guam. Wassermann's reaction has been shown by Odell to be positive in a large number of cases, but this reaction, as is well known, may be present in other diseases besides syphilis (yaws, leprosy, etc.). The fact that potassium iodide and salvarsan are apparently beneficial in gangosa is not a sufficient reason for stating that the disease is syphilitic—these drugs being useful in many other conditions.

According to the author the disease is steadily decreasing in Guam, thanks to the improvement in general sanitation and to the measures taken of segregating the patients in a colony until they are cured.

[Gangosa has probably a wider geographical distribution than hitherto supposed: a condition identical with, or at least extremely similar to gangosa, has been observed by Seligman in New Guinea, and by Chalmers and Castellani in Ceylon.]

A. Castellani.

WOLBACH (S. B.). **The Filterable Viruses. A Summary.**—*Jl. of Medical Research.* 1912. Sept. Vol. 27. No. 1. (New Ser. Vol. 22. No. 1.) pp. 1-25.—*Boston Med. & Surg. Jl.* 1912. Sept. 26. Vol. 167. No. 13. pp. 419-426.

In this paper the author describes the diseases due to what have been called filterable viruses. The group includes many of the most important diseases of man and animals. The author defines the term filterable viruses as meaning micro-organisms which will pass through filters, the pores of which are too small to give passage to bacteria. Such filters are the well known Berkefeld filter made of diatomaceous earth and the Chamberland filter made of unglazed porcelain. The term "ultramicroscopic" is often used as synonymous with "filterable," but filterability does not necessarily mean that the virus cannot be made visible in some stage of its growth or by methods of illumination now employed. The virus of pleuro-pneumonia in cattle, for example, passes through the Berkefeld and coarser porcelain filters; yet it may be seen by direct observation with the best optical equipment, using transmitted light and a magnification of 1,500 diameters. The dark field method of illumination and the ultramicroscope further will demonstrate particles in fluid which are only a little larger than protein molecules, but as this method of illumination shows up all small particles as luminous points it becomes impossible to distinguish minute organisms, such as filterable viruses, from the myriads of particles necessarily contained in fluids available for study.

In man the following diseases have been shown to be due to filterable viruses:—Yellow fever; dengue fever; pappataci fever; typhus fever; scarlet fever?; measles; molluscum contagiosum; poliomyelitis; verruca vulgaris; trachoma.

In addition, common to man and animals are the following:—Foot and mouth disease; rabies; variola; and vaccinia. Of these yellow fever, dengue, and pappataci fever are of special interest to tropical workers.

The filterable nature of the virus of yellow fever was discovered by REED and CARROLL in 1901. The virus passes through Berkefeld and Chamberland B. filters, and is destroyed by a temperature of 55° C. in ten minutes or by exposure to air at a temperature of 24° to 30° C. in 48 hours. One attack is said to confer complete immunity. Passive immunity has not been obtained.

In dengue the virus occurs in the blood stream; it passes through Berkefeld filters which are impervious to the *Micrococcus melitensis*, but further than this its properties are still unknown.

In pappataci fever the virus occurs in the blood during the first day of the fever; it filters through a Berkefeld filter and may be preserved outside the body for three and a half days.

The author in his final summary refers to the cell inclusions to which PROWAZEK has given the name of *Chlamydozoa* and states that few pathologists and bacteriologists believe that these inclusions are parasitic. He inclines to the belief that certain of the filterable viruses are bacterial in nature, because of their resistance to physical and chemical agents, and because four of them have been cultivated. The fact that there is a group that is

transmitted only by biting insects would indicate that some of them are protozoal in nature. This seems most probable in view of the filtration of protozoa which has been accomplished by Borrel and Spiegel. The fact that spirochaetes have been filtered suggests that certain of the diseases transmitted by intermediate hosts may be due to spirochaetes, and particularly some of the diseases of animals.

From the grouping of these diseases, which is possible with respect to the manner of transmission, localization of the virus in the tissues, and properties of the viruses in respect to physical and chemical agents, Wolbach predicts that at least some of the diseases which fall into a given group are caused by very similar micro-organisms; and that the actual demonstration of the parasite, or its culture, of one disease will mean a ready solution for others of the same group. It is quite possible that when the knowledge of filterable viruses is more complete the conception of living matter will change considerably and scientists will cease to attempt to classify the filterable viruses as animal or vegetable. The extreme minuteness of certain of these viruses, which cannot be thrown down by prolonged centrifugation with the most powerful machines, and which pass through the finest porcelain filters, suggests that some of their properties may be due to this very minuteness in size; and that like the colloid solution of metals, which behave in some respects like enzymes, a part of their activities and even pathogenic effect may be due to physical phenomena, such as surface action. The extreme minuteness may also account for the contagious nature of certain diseases, because it has been recently shown that minute particles suspended in air or liquid obey the laws which govern the diffusion of gases and of substances in solution in liquids.

G. C. L.

Rost (G.). **Klimatische Bubonen.** [Climatic Bubo.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1912. Oct. Vol. 16. No. 20. pp. 677-693.

In this paper an interesting account of climatic bubo is given. The material for the research was obtained when the author was serving on board a German training ship in different parts of the world. In seventeen cases studied in detail the bubo was on the right side in seven, on the left side in five, on both sides in four, while in one instance the left crural glands were implicated. Suppuration was observed in three of the cases only. The different theories as to the nature and cause of the condition are given and discussed. The disease apparently varies considerably as regards its prevalence in different parts of the tropics and sub-tropics and may even show seasonal fluctuations. It is characterised clinically by a series of quite definite symptoms which enable it to be differentiated from other bubonic conditions. The most prominent of these, according to Rost, are as follows—(1) the length of the incubation time between infection and the commencement of the lymphatic swelling (two to five weeks or even in one case seven weeks), (2) the slow development of the bubo,

(3) the size, this often being enormous, (4) little inclination to periadenitis and suppuration, (5) involvement of the pelvic glands, (6) very tedious resolution.

As regards treatment, symptomatic and conservative methods are the best and resolution may be hastened by the use of X-rays. The etiology of the disease is uncertain, but the author believes that the infection is acquired by sexual connection with native women.

G. C. L.

SNOKE (JNO. H.) & STRICK (E. J.). **A Case of Suspected Pulmonary Blastomycosis.**—*China Med. Jl.* 1912. Sept. Vol. 26. No. 5. pp. 280-283.—*Jl. Amer. Med. Assoc.* 1912. Dec. 7. Vol. 59. No. 23. p. 2056.

A Chinese woman came to the Neerbosch Hospital complaining of weakness and shortness of breath. Physically she was emaciated, anaemic, and constantly coughing up a muco-purulent sputum. An area of dullness about five cm. in diameter was detected on the right side in front, above the right mammary region in the nipple line; otherwise the lungs were normal. No tubercle bacilli were found in the sputum (twenty examinations), but spore-like bodies with double refractile capsules and granules were seen. On the assumption that these were the parasites of blastomycosis BEVAN's treatment of copper sulphate, grains 0·25 thrice daily was given. This quickly ameliorated the symptoms, the temperature coming down to normal and the constant cough being much relieved. The condition was not cured, however, as after three months of treatment the cough still persisted and the sputum contained parasites.

A historical resumé of the disease is given. In the past it has generally been confused with tuberculosis. Iodide of potassium and copper sulphate are the drugs generally employed for treatment. In the opinion of the authors these are only palliative and not definitely curative.

G. C. L.

BATES (L. B.). **The Wassermann Test in the Tropics.**—*Arch. Internal. Med.* 1912. Nov. 15. Vol. 10. No. 5. pp. 470-477.

The author concludes that malarial infection does not affect the Wassermann reaction (Noguchi modification). Cases of filariasis, yellow fever, blackwater fever and amoebic dysentery also gave negative results. The number of these tested was, however, too small to base accurate conclusions upon.

Two out of three uncomplicated cases of yaws gave positive reactions. The test was also of great value in the diagnosis of obscure cases of arthritis. When guinea-pig serum is used it is necessary to test it for native anti-human haemolysins in certain localities, and all sera in which they are found must be discarded.

G. C. L.

CASTOR (R. H.). **Pigmented Maculae on the Body.**—*Jl. Trop. Med. & Hyg.* 1912. Oct. 15. Vol. 15. No. 20. pp. 307-309.

In this paper attention is directed to the frequency of the so-called Mongolian spots,—bluish maculae, first described by BEALZ in Mongolian races, and by MARTINOTTI, CONSIGLIO and others in Europeans. In the Burmese they are very common and are found in order of frequency on the following regions: Sacral region and buttocks, waist, arms, legs, shoulders, head, face, and neck.

They are generally multiple and the size of the patches varies from a threepenny bit or less to eight inches. They are of various shapes, the majority roundish, others oblong, others almost square. Their colour is blackish-blue, somewhat resembling that of a healing bruise; they do not disappear on pressure; are present at birth and are in the author's opinion atavistic. They generally disappear between the 3rd and 4th years. The author has found somewhat similar patches of pigmentation on the oral mucosa.

A. C.

## BOOK REVIEW.

*The Journal of the East Africa and Uganda Natural History Society.* 1912. Nov. Vol. 3. No. 5. 66 pp. Published by Longmans, Green & Co.: London, New York, Bombay and Calcutta.

An interesting little journal, the present number containing papers on the collection and preservation of sea fish; the game of North Kavirondo; the snakes of British East Africa; preservation of natural history specimens; the Thowa river; and early man in British East Africa. Notes of topics of interest are also appended. Photographs and maps illustrate some of the articles and help to increase their value. Members of the Society are reminded that the supply of material for the journal is not as ample as could be wished and they are asked to contribute personal observations. The educative value of such a journal is a real one and the editors are to be congratulated on the success which it has attained.

G. C. L.

**Now Ready. Second Edition. In Two Handsome Volumes.**

Pp. xxiv.+2156. With 9 Coloured Plates and 99 Illustrations. **Price 25/- net.**

(SEVENTEENTH THOUSAND.)

# TEXT-BOOK OF MEDICINE.

## By G. DIEULAFOY,

Professor of Clinical Medicine at the Faculté de Médecine de Paris: Physician to the Hôtel Dieu; Membre de l'Académie de Médecine.

**Second English Translation from the Sixteenth French Edition, by**

**V. E. COLLINS,** M.D.Lond., M.R.C.S., L.R.C.P. **and J. A. LIEBMANN,** Ph.D., M.A., LL.D.

*"One of the most complete and helpful works on the practice of medicine that has appeared within recent times. The author's association with the late Professor Trousseau, combined with his own profound clinical knowledge, certainly makes his manual a safe guide to the practice of medicine. The author has throughout confined himself to established facts, avoiding useless discussions and sterile hypotheses."*—MEDICAL PRESS AND CIRCULAR.

**Published by BAILLIÈRE, TINDALL & COX,**

8, HENRIETTA STREET, COVENT GARDEN, LONDON.

**Recently Published on behalf of the Sudan Government.**

**THE FOURTH REPORT OF THE**

# WELLCOME TROPICAL RESEARCH LABORATORIES,

## KHARTOUM.

Since the Third Report was issued, in 1908, a great amount of valuable research work has been accomplished.

This Fourth Report contains the facts, observations and discoveries recently brought to light and is the actual record, at first hand, of new contributions to the solution of problems of deep and world-wide importance.

**Volume A.—Medical.** Large quarto. Cloth, pp. 404 and 174 illustrations, with many fine coloured plates. Price 21s. net.

**Volume B.—General Science.** Pp. 333, and 189 illustrations, with many coloured plates. Price 18s. net.

**Second Review of some Recent Advances in Tropical Medicine, &c.**

(Being a Supplement to the Fourth Report.) Pp. 428. Price 15s. net.

**First Report,** published in 1904. Price 12s. 6d. net.
**Second Report,** published in 1906. Price 17s. 6d. net.
**Third Report,** published in 1908. Price 21s. net.

**Supplement to Third Report.**—"REVIEW OF SOME OF THE MORE RECENT ADVANCES IN TROPICAL MEDICINE, &C." By A. BALFOUR and R. G. ARCHIBALD. Published in 1908. Price 10s. 6d. net.

These publications show the advance of the bacteriological and physiological study of the disorders affecting both man and beast in the Tropics, and also afford valuable information on the pioneer work of research which is the basis of the industrial development of a country newly opened to civilisation.

**PROSPECTUS POST FREE.**

**BAILLIÈRE, TINDALL & COX,**

***8, Henrietta Street, Covent Garden, London.***

# TROPICAL DISEASES BUREAU LIBRARY.

The following is a list of periodicals received in the Bureau Library.

## EUROPE.

### Great Britain.

Annals of Tropical Medicine & Parasitology (Liverpool).
British Medical Journal (London).
Bulletin of Entomological Research (London).
Edinburgh Medical Journal.
Glasgow Medical Journal.
Journal of Comparative Pathology & Therapeutics (Edinburgh & London).
Journal of Hygiene (Cambridge).
Journal of the London School of Tropical Medicine (London).
Journal of Pathology & Bacteriology (Cambridge).
Journal of the Royal Army Medical Corps (London).
Journal of State Medicine (London).
Journal of Tropical Medicine & Hygiene (London).
Lancet (London).
Parasitology (Cambridge).
Proceedings of the Royal Society, Series B. (London).
Public Health (London).
Review of Applied Entomology. Series A: Agricultural. Series B: Medical & Veterinary (London).
Transactions of the Society of Tropical Medicine & Hygiene (London).
Veterinary Journal (London).
Veterinary News (London).
Veterinary Record (London).
Yellow Fever Bureau Bulletin (Liverpool).

### France.

Annales d'Hygiène et de Médecine Coloniales (Paris).
Annales de l'Institut Pasteur (Paris).
Archives de Médecine et Pharmacie Navales (Paris).
Archives de Parasitologie (Paris).
Bulletin de l'Institut Pasteur (Paris).
Bulletin de l'Office International d'Hygiène Publique (Paris).
Bulletin de la Société de Pathologie Exotique (Paris).
Le Caducée (Paris).
Comptes Rendus de la Société de Biologie (Paris).
Recueil de Médecine Vétérinaire (Alfort).
Répertoire de Police Sanitaire Vétérinaire (Paris).
Revue de Médecine et d'Hygiène Tropicales (Paris).
Revue Générale de Médecine Vétérinaire (Lyons).
Revue Vétérinaire (Toulouse).
La Semaine Médicale (Paris).

### Germany.

Archiv für Schiffs- und Tropen-Hygiene (Leipzig).
Centralblatt für Bakteriologie. 1. Abteilung. Originale & Referate (Jena).
Deutsche Medizinische Wochenschrift (Berlin).
Deutsche Militärärztliche Zeitschrift (Berlin).
Deutsche Tierärztliche Wochenschrift (Hanover).
Mitteilungen aus dem Zoologischen Museum in Berlin.
Zeitschrift für Chemotherapie und verwandte Gebiete. 1. Teil., Originale (Leipzig).
Zeitschrift für Hygiene und Infektionskrankheiten (Leipzig).
Zeitschrift für Veterinärkunde (Berlin).

### Italy.

Annali d'Igiene Sperimentale (Rome).
Annali di Medicina Navale e Coloniale (Rome).
Atti della Accademia Gioenia di Scienze Naturali in Catania.
Atti della Società per gli Studi della Malaria (Rome).

ITALY—*continued.*

Bollettino delle Sedute della Accademia Gioenia di Scienze Naturali in Catania.
Clinica Veterinaria (Milan).
Gazzetta Internazionale di Medicina, Chirurgia, Igiene, &c. (Naples).
Giornale della R. Accademia di Medicina di Torina.
Giornale della Reale Società Italiana d'Igiene (Milan).
Giornale di Medicina Veterinaria (Turin).
Malaria e Malattie dei Paesi Caldi (Rome).
Moderno Zooiatro (Bologna).
Nuovi Ercolani (Milan).
Pathologica (Genoa).
Policlinico (Rome).
Riforma Medica (Naples).
Lo Sperimentale (Florence).

BELGIUM.

Annales de Médecine Vétérinaire (Ixelles-Brussels).
Bulletin de l'Académie Royale de Médecine de Belgique (Brussels).

HOLLAND.

Janus (Leyden).

GREECE.

Archives de Médecine (Athens).
La Grèce Médicale (Athens).

PORTUGAL.

Archivos de Hygiene e Pathologia Exoticas (Lisbon).
Archivos do Instituto Bacteriologica Camara Pestana (Lisbon).
Bulletin de la Société Portugaise des Sciences Naturelles (Lisbon).

SWITZERLAND.

Schweizer Archiv für Tierheilkunde (Zurich).

## AMERICA.

CANADA.

Canadian Medical Association Journal (Toronto).

UNITED STATES.

American Journal of Public Health (New York).
American Journal of Veterinary Medicine (Chicago).
Archives of Internal Medicine (Chicago).
Bureau of Animal Industry Bulletins (Washington).
Hygienic Laboratory Bulletins (Washington).
Index Medicus (Washington).
Journal of the American Medical Association (Chicago).
Journal of Experimental Medicine (New York).
Military Surgeon (Washington).
New Orleans Medical & Surgical Journal.
New York Medical Journal.
Proceedings of the United States National Museum (Washington).
Public Health Reports (Washington).
Public Health Bulletins (Washington).
Southern Medical Journal (Nashville, Tenn.).
Studies from the Zoological Laboratory, University of Nebraska.
Texas State Journal of Medicine (Fort Worth).
United States Naval Medical Bulletin (Washington).
University of California Publications in Zoology (Berkeley).

CENTRAL AMERICA.

Canal Record (Ancon).
Proceedings of the Canal Zone Medical Association (Mount Hope, C.Z.).

SOUTH AMERICA.

Memorias do Instituto Oswaldo Cruz (Rio de Janeiro-Manguinhos).
Revista Medica de S. Paulo (S. Paulo).
La Semana Médica (Buenos Ayres).

ASIA.

INDIA.

Indian Medical Gazette (Calcutta).
Medical Missions in India (Pokhuria).
Paludism (Simla).
Scientific Memoirs by Officers of the Medical & Sanitary Departments of the Government of India (Calcutta).

CHINA.

China Medical Journal (Shanghai).

EAST INDIAN ARCHIPELAGO.

Geneeskundig Tijdschrift voor Nederlandsch-Indië (Rijswijk-Batavia).
Philippine Journal of Science, Section B. Philippine Journal of Tropical Medicine (Manila).

INDO-CHINA.

Bulletin de la Société Médico-Chirurgicale de l'Indochine (Hanoi & Haiphong).

AFRICA.

Archives de l'Institut Pasteur de Tunis.
Nyasaland Sleeping Sickness Diary (Zomba).
Records of the Egyptian Government School of Medicine (Cairo).
South African Medical Record (Cape Town).
Transvaal Medical Journal (Johannesburg).

AUSTRALASIA.

Australian Medical Journal (Melbourne).
Australasian Medical Gazette (Sydney).

NOTE.—The Director would consider proposals for the exchange of the Bureau publications with other medical and scientific journals in which original papers on tropical diseases are published.

## BUREAU NOTICES.

Copies of THIMM'S "Bibliography of Trypanosomiasis" 1909, and sets of the *Sleeping Sickness Bulletin*, Nos. 5–40 (Nos. 1–4 are out of print) and of the *Kala Azar Bulletin* (four numbers) are available for presentation. These will be sent subject to payment of carriage by the applicants.

Works in the Bureau Library may be consulted between 10 and 5.30.

The Director can be seen between 10 and 1; for a later hour an appointment should be made.

The Director will be glad to receive early copies of works or reprints on Tropical Diseases for notice in the *Bulletin* and for the Library. To be addressed—Tropical Diseases Bureau, Imperial Institute, London, S.W.

(Telephone :—Kensington, 743.)

**The Annual Subscription for the TROPICAL DISEASES BULLETIN is Twenty-one Shillings post free.**

**Subscriptions should be sent to Messrs. BAILLIÈRE, TINDALL and COX, 8, Henrietta Street, Covent Garden, London, W.C., who are also the advertisement agents.**

**The Bulletin will appear as a rule twice a month. Each number will contain from 50-60 pages.**

**The Tropical Diseases Bureau publishes also the TROPICAL VETERINARY BULLETIN, quarterly, Annual Subscription Ten Shillings, single numbers Three Shillings post free.**

# CONTENTS.

## FILARIASIS.


Page.

FOLEY : Morphology of *Mf. bancrofti* and *diurna* ... 417
OUZILLEAU : Human Filariae in French Equatorial Africa ... ... ... ... ... ... ... 419
LOW : The Life of Filarial Embryos outside the Body ... 420
THOMPSON ; ROSANOW ; KONDOLEON : Operations for Elephantiasis ... ... ... ... ... 421–422
WURTZ & SOREL : Incubation in Dracontiasis ... ... 422
MITTER : *Filaria immitis* in Calcutta ... ... ... 423
BERNARD & BAUCHE ; SAISAWA : Dog Filariae ... 423–424
WIRTH : Filariae in Horses ... ... ... ... ... 424
PRICOLO : „ in Camels ... ... ... ... ... 425
ERRATUM ... ... ... ... ... ... ... 425


## HELMINTHIASIS.


NELSON : Schistosomiasis in Australia ... ... ... 426
BOUET & ROUBAUD : Schistosomiasis in French West Africa ... ... ... ... ... ... ... 426
FERGUSON : Lesions in Schistosomiasis ... ... ... 428
KOBAYASHI : The Source of *Clonorchis endemicus* ... 429
ROUX & TARDIEU : *Opisthorchis sinensis* in a European 430
STANNUS : Ankylostomiasis in Nyasaland ... ... ... 431
JOYEUX : „ in Upper Guinea ... ... 432
STILES & ALTMAN : Proportion of Sexes in *Necator americanus* ... ... ... ... ... ... 433
STILES & LEONARD ; LEYS : Treatment of Ankylostomiasis ... ... ... ... ... ... ... 434
LAW : Ankylostomiasis in British Guiana ... ... ... 435
NICOLL : Anaemia of Ankylostomiasis ... ... ... 436
BERRIO : Tricocephaliasis and its Treatment ... ... 436
DEGORCE ; HENRY ; LAMOUREUX : Fatal Cases of Ascariasis ... ... ... ... ... ... 437–438
BRAU : Oxyuriasis in Indo-China ... ... ... ... 439
BELL : Intestinal Parasites in Hong Kong ... ... ... 439
KINDLEBERGER : Intestinal Parasites in Guam ... ... 440
RANSOM & HALL : Action of Anthelmintics on Parasites Outside the Alimentary Canal ... ... ... ... 440
LEIPER : Gapes in Man ... ... ... ... ... 441
WEINBERG & KEILIN : Disease of Ascaris ... ... 442
WALKER : Hydatid in Kaffir ... ... ... ... 442
RAILLIET, HENRY & JOYEUX : Trematodes from Primates 442
POMELLA : Lesions caused in the Guinea-pig by Teniotoxins ... ... ... ... ... ... ... ... 443
HENRY & CIUCA : Specific Antibodies in the Serum of a Rabbit infected with *Coenurus serialis* ... ... 443


## CHOLERA.


CONSEIL : Cholera in Tunis ... ... ... ... ... 445
SERGENT, NÈGRE, BREGÉAT & VIVIEN : Cholera in Oran 445
SIMOND & VALLERY-RADOT : Cholera in Constantinople 446
SCHÜRMANN & ABELIN-ROSENBLAT ; RIVAS & SMITH : Diagnosis ... ... ... ... ... ... 446–447
EMMERICH : Treatment ... ... ... ... ... 447
JATTA ; GREIG : Carriers ... ... ... ... 448–449

## CHOLERA—*continued.*

Page.

PANE: Cholera Vibrios in Relation to Other Faecal Organisms ... ... ... ... ... ... ... 449
LANDES: Study of Vibrios Isolated in Algeria ... ... 450
BAERTHLEIN; VAN LOGHEM: Cholera and Allied Vibrios ... ... ... ... ... ... ... 450
CHWILEWIZKY: Nitrite Production in Cholera ... ... 451
GALEOTTI: Nucleo-Proteid of Cholera Bacillus ... ... 452
ZAMMIT: Cholera Vibrios Isolated from Sea Water ... 452
CANO & MARTINEZ: Water Fauna and Cholera Vibrios 452
GOÉRÉ: Can Cholera be Transmitted by Lizards? ... 453
THIROUX: A Cholera-like Disease in Senegal ... ... 453
BERTARELLI: On the Absence of Cholera in Italy in 1912 ... ... ... ... ... ... ... 453

## DYSENTERY.

MENÉTRIER & BRODIN; GALLIARD & BRUMPT: Cases of Amoebic Dysentery ... ... ... ... ... 454
KUBO: Aetiological Significance of *Entamoeba histolytica* 455
CARINI: Case of Amoebic Phagadena of the Skin ... 455
MAXWELL: Fistulous Disease of the Buttocks ... ... 456
ROSENBERGER & TERREL: Amoebiasis in the Insane ... 456
WENYON: Experimental Amoebiasis in Cats ... ... 457
ROGERS; SIMON; BECK; COHENDY; DEEKS: Treatment of Amoebic Dysentery ... ... ... 458–460
LEGRAND: Amoebic Abscess of the Brain ... ... 460
FINK: Treatment of Liver Abscess ... ... ... 461
DARLING: Observations on the Cysts of *Entamoeba tetragena* ... ... ... ... ... ... ... 462
CRAIG: Parasitic Amoebae and Disease ... ... ... 463
PENARD: Amoebae of the Terricola Group ... ... 464
BUTLER: Laboratory Notes upon the Bacillus of Dysentery ... ... ... ... ... ... ... 465
WELLS: Dysentery in an Indian Jail ... ... ... 466
CASTELLANI: Pseudo-Sprue due to Flexner-like Bacillus 467
GAUDUCHEAU: *Bacillus dysenteriae* in Relation to Amoebae ... ... ... ... ... ... ... 468
JONES: Treatment of Dysentery in Asylums ... ... 468
MORESTEN: Liver Abscess ... ... ... ... ... 469
SMITHIES: *Trichomonas hominis* in the Stomach ... 469

## MYIASIS.

PIRAJÁ DA SILVA; PIETER: Screw Worm Disease ... 470
CARTER & BLACKLOCK: External Myiasis in a Monkey 471

## MISCELLANEOUS.

ANGENY: Gangosa ... ... ... ... ... ... 472
WOLBACH: The Filterable Viruses... ... ... ... 473
ROST: Climatic Bubo... ... ... ... ... ... 474
SNOKE & STRICK: Pulmonary Blastomycosis ... ... 475
BATES: The Wassermann Test in the Tropics ... ... 475
CASTOR: Pigmented Maculae on the Body ... ... 476

---

BOOK REVIEW... ... ... ... ... ... ... 476

There will be one issue only of the *Bulletin* during March, that of March 15.